IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

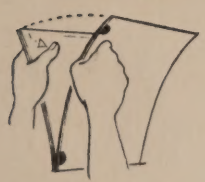
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

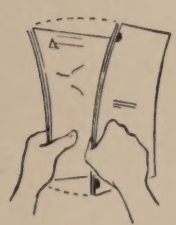
DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***



1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.



2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 478 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ MARCH, 1960

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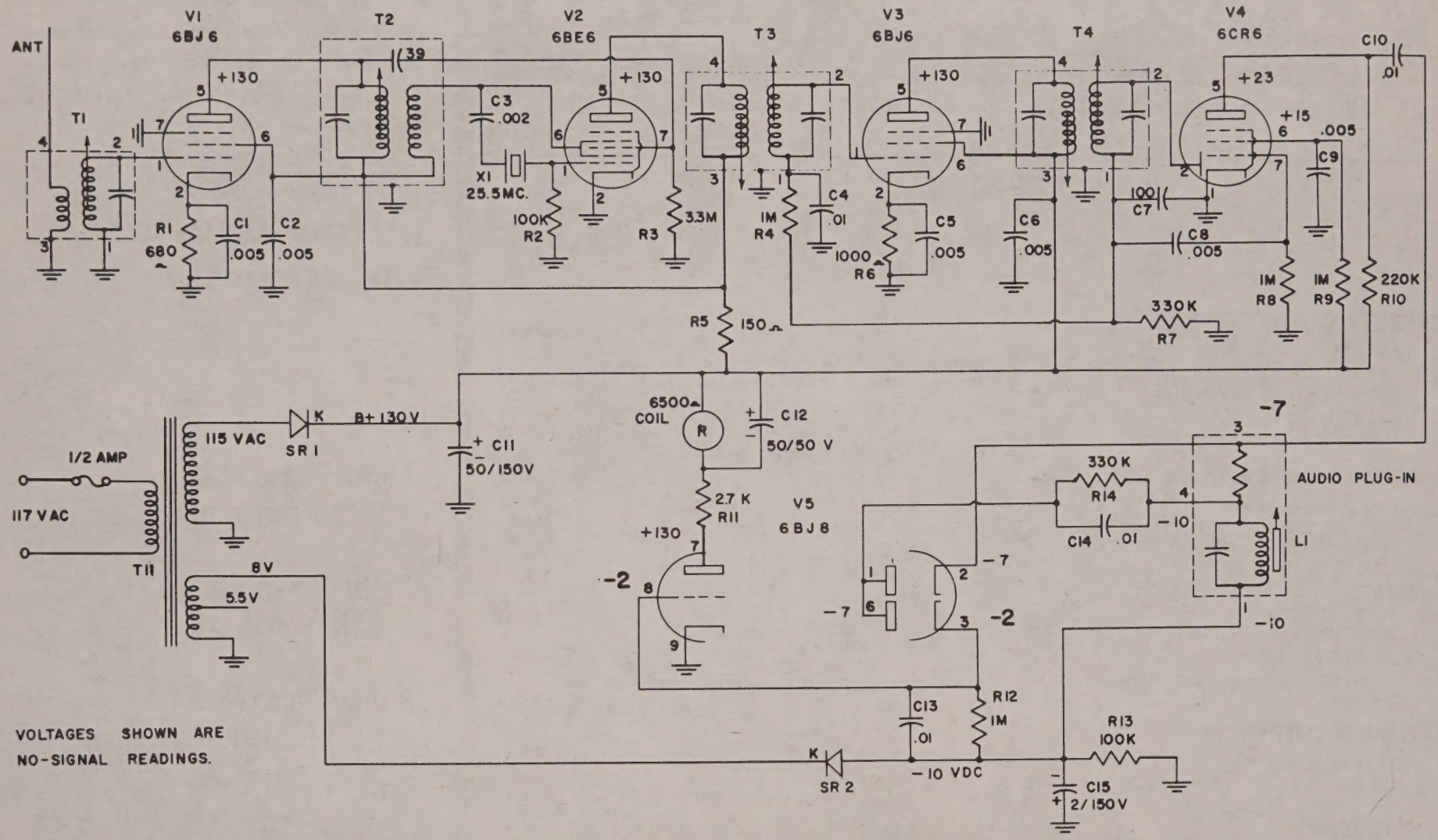
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Multi-Elmac Model C2B (Transmitter)

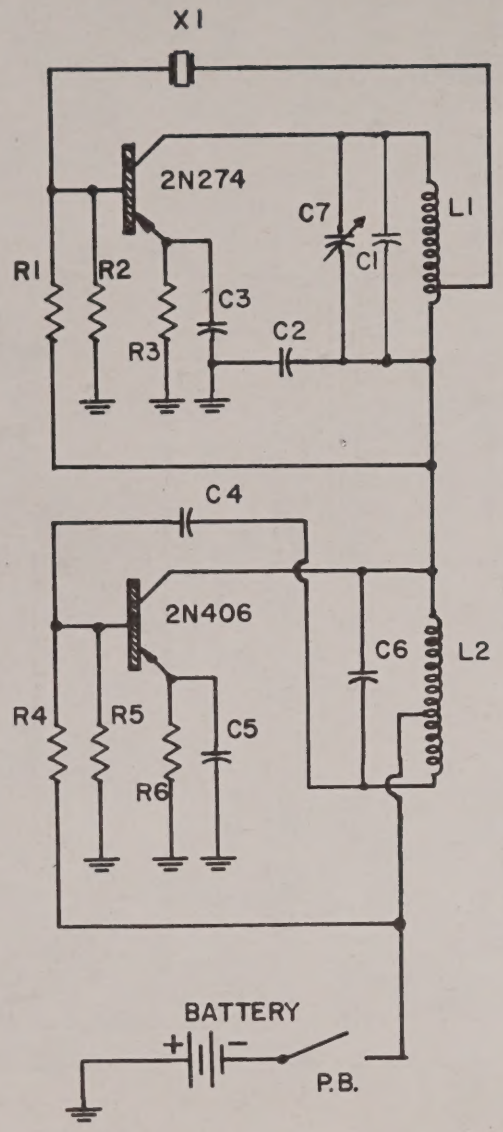
Multi-Elmac Model C2B (Receiver)

Multi-Elmac Model HC-2B (Hand Transmitter)



MULTI-ELMAC MODEL C2B (RECEIVER)

Schematic Diagram Courtesy of Multi-Products Co.

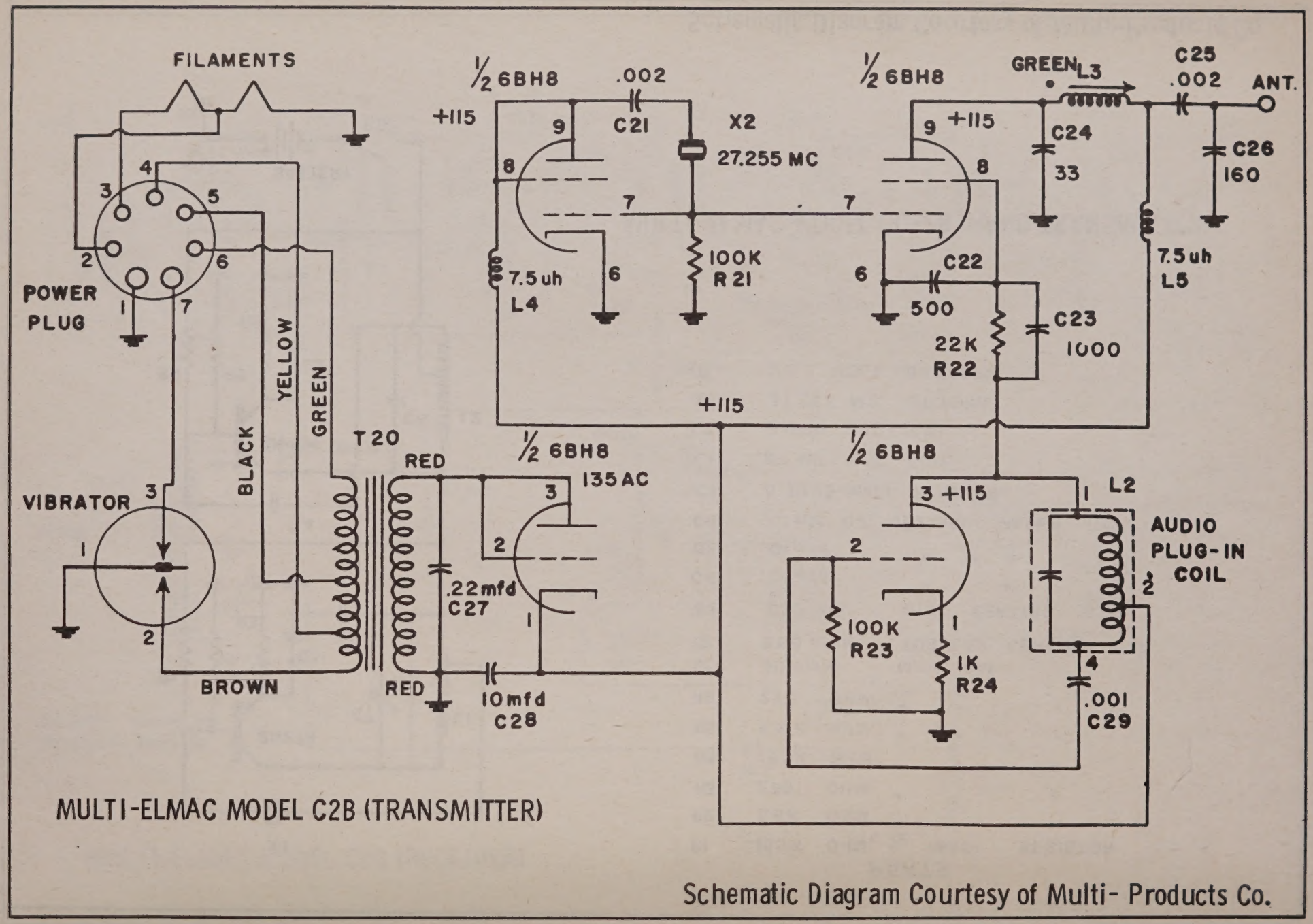


PARTS

R1	150K OHM, ½ WATT	RESISTOR
R2	5.6K OHM	" " "
R3	270 OHM	" " "
R4	150K OHM	" " "
R5	5.6 K OHM	" " "
R6	270 OHM	" " "
C1	39 mmfd	MICA CAP.
C2	250 mmfd	TUBULAR CERAMIC CAP.
C3	.002 mfd	DISC CERAMIC CAP.
C4	.01 mfd	" " "
C5	.01 mfd	" " "
C6	.01 mfd OR .002 mfd	PAPER CAP.
C7	5 TO 25 mmfd	TRIMMER
L1	27 MC	OSC. COIL
L2	AUDIO	OSC. COIL
X1	27.255 MC.	CRYSTAL
B	22.5 VOLT	BATTERY

MULTI-ELMAC MODEL HC-2B (HAND TRANSMITTER)

Schematic Diagram Courtesy of Multi-Products Co.



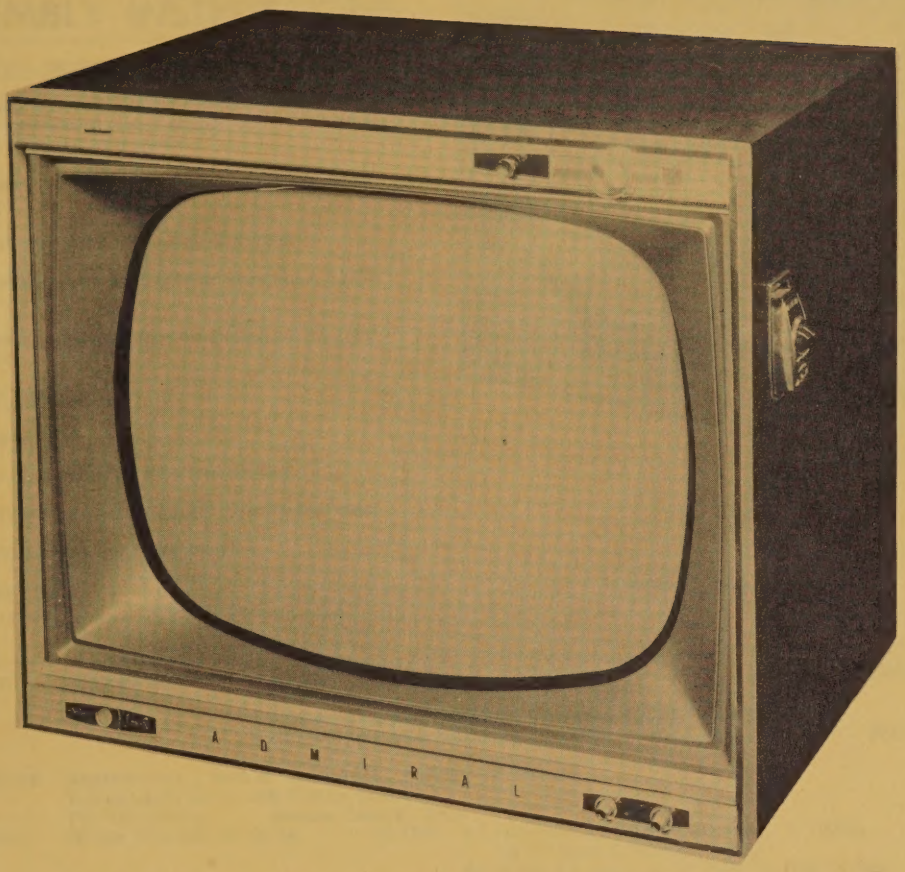
MULTI-ELMAC MODEL C2B (TRANSMITTER)

Schematic Diagram Courtesy of Multi- Products Co.

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)

ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)



ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)

MODEL TS22M41 (Ch. 20T6)

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PHOTOFACT® Folder with CIRCUITRACE®

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)

ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)

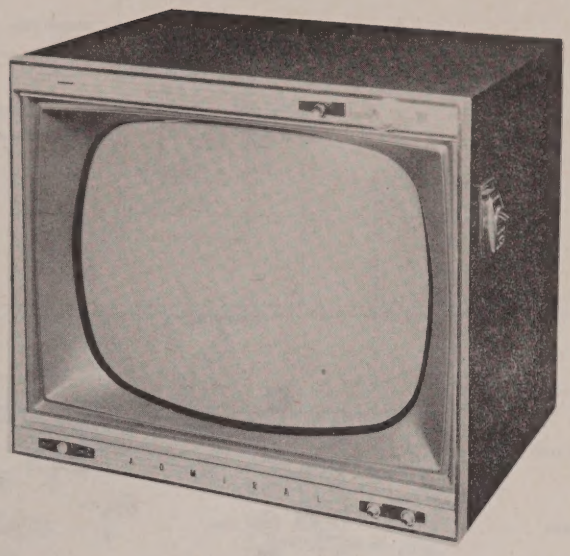
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL TS22M41

1. Remove 2 metal screws at bottom of rear cover. Slide 6 retaining springs toward center of rear cover. Remove antenna lead. Remove rear cover.
2. Remove speaker leads and 2 metal screws holding Son-R manual switch.
3. Remove 5 chassis bolts from bottom of cabinet.
4. Remove 7 metal screws holding front escutcheon to the cabinet.
5. Remove chassis and picture tube by sliding out the front of the cabinet.

PICTURE TUBE REMOVAL

1. Remove chassis.
2. Remove yoke, picture tube socket and HV lead.
3. Remove 4 metal screws holding picture tube support wire.
4. Loosen picture tube mounting strap bolt.
5. Remove picture tube.



MODEL TS22M41 (Ch. 20T6)

TRADE NAME	Admiral	MODELS	CHASSIS
		CS22M41, CS22M42, CS22M43, CS22M44, LS22M42, LS22M43, LS22M44, TS22M40, TS22M41, TS22M42, TS22M43	20T6
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Television Receiver with Remote Control		
TUBES	TV: VHF-Fifteen Remote Control : Four		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING TV (with Remote Control) 200 Watts, 2.4 Amp. @ 117 Volts AC (While Tuning) 155 Watts, 1.9 Amp. @ 117 Volts AC (Not Tuning)	
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".) (Some versions use a 1 amp. fuse as alternate in this application.)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 6 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Range control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JA773

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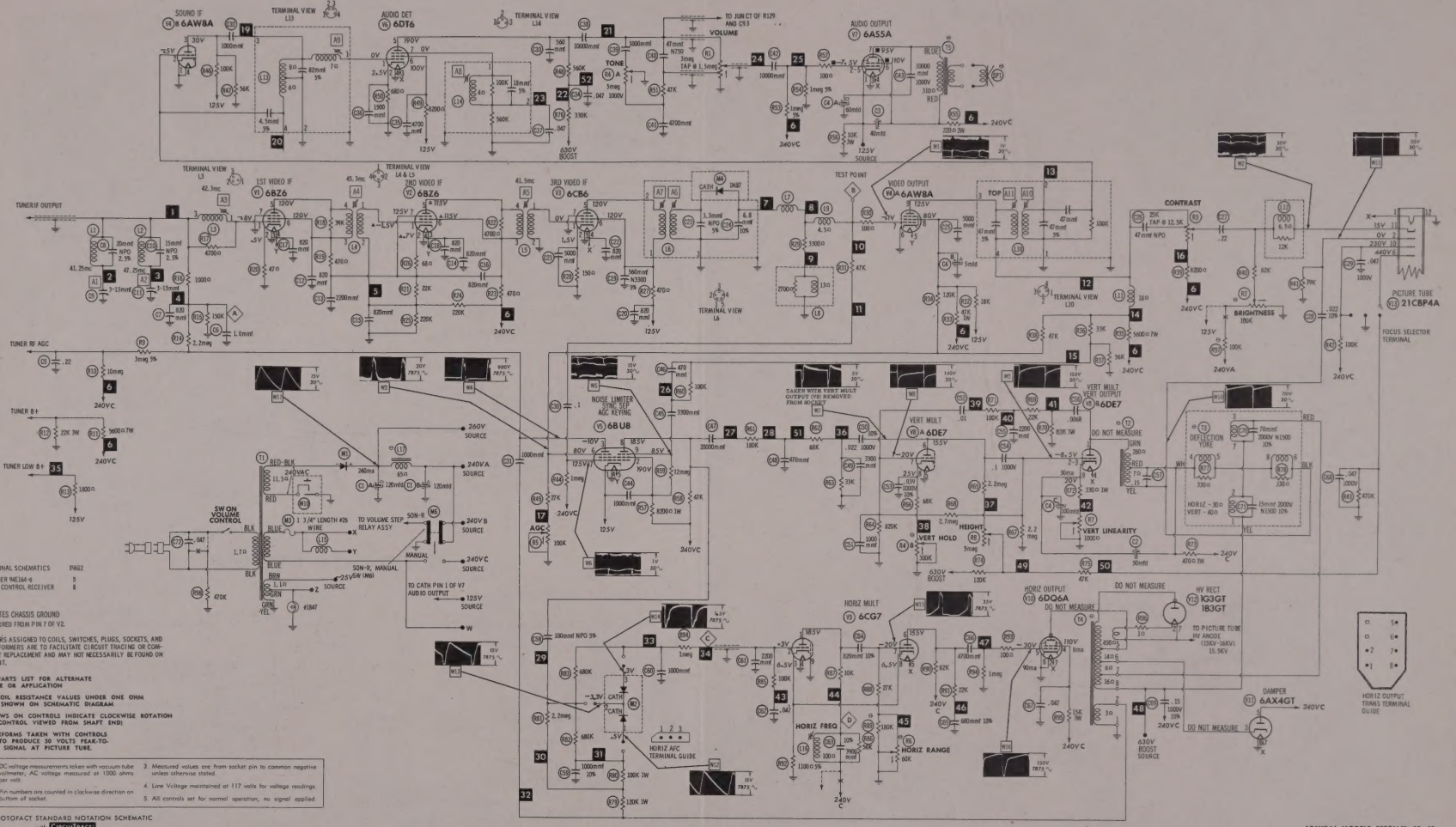

ADDITIONAL SCHEMATICS — PAGE

VHF TUNER 94E364-6 — II

REMOTE CONTROL RECEIVER — II

⏚ DENOTES CHASSIS GROUND

▲ MEASURED FROM PIN 7 OF V2.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊛ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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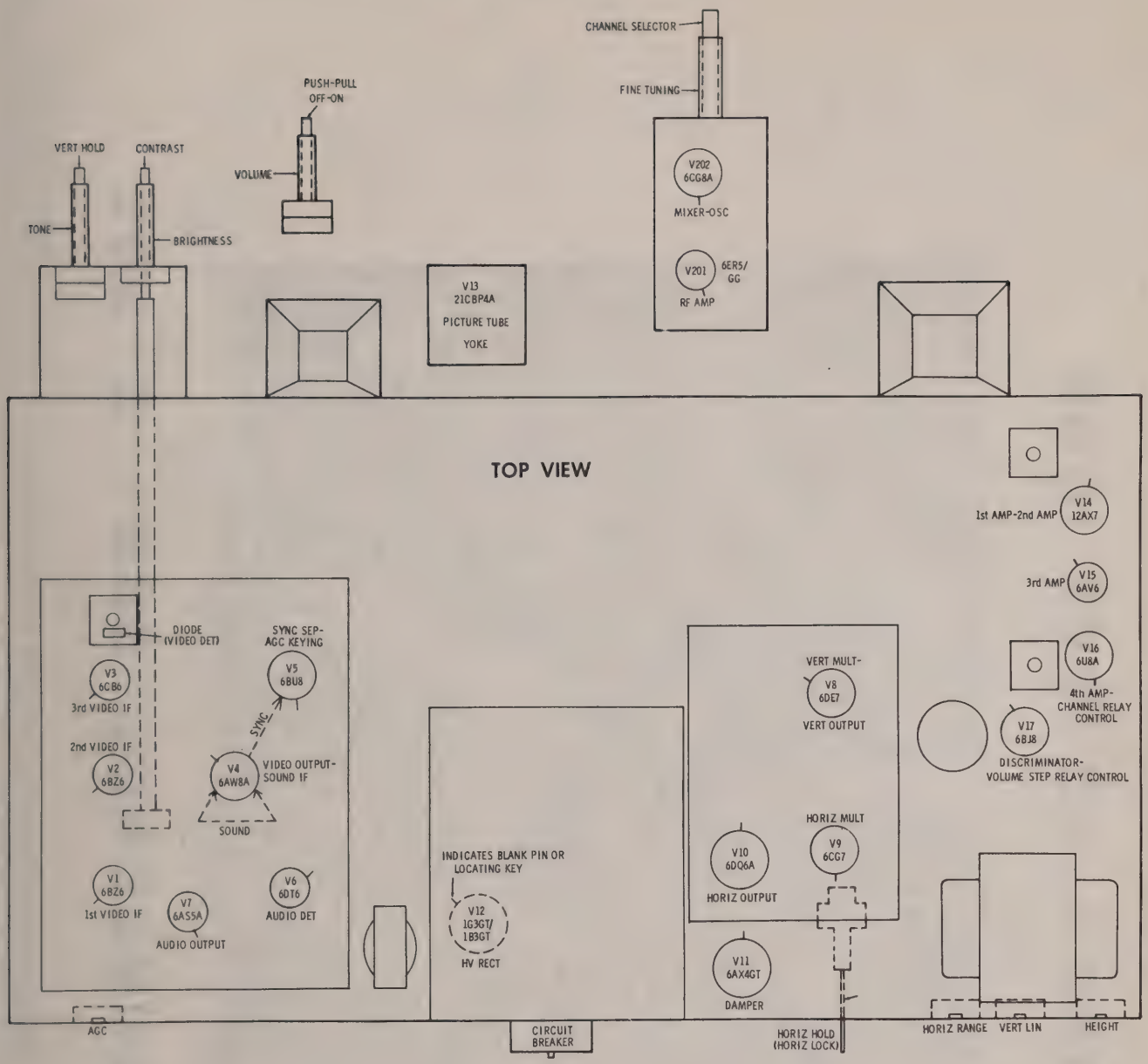
ADMIRAL MODELS CS22M41, 42, 43, 44, LS22M42, 43, 44, TS22M40, 41, 42, 43 (Ch. 20T6)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker (LV Power), Rect. (B+), Fuse Wire (Filament)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V13
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, Rect. (B+)
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. AFC), V9

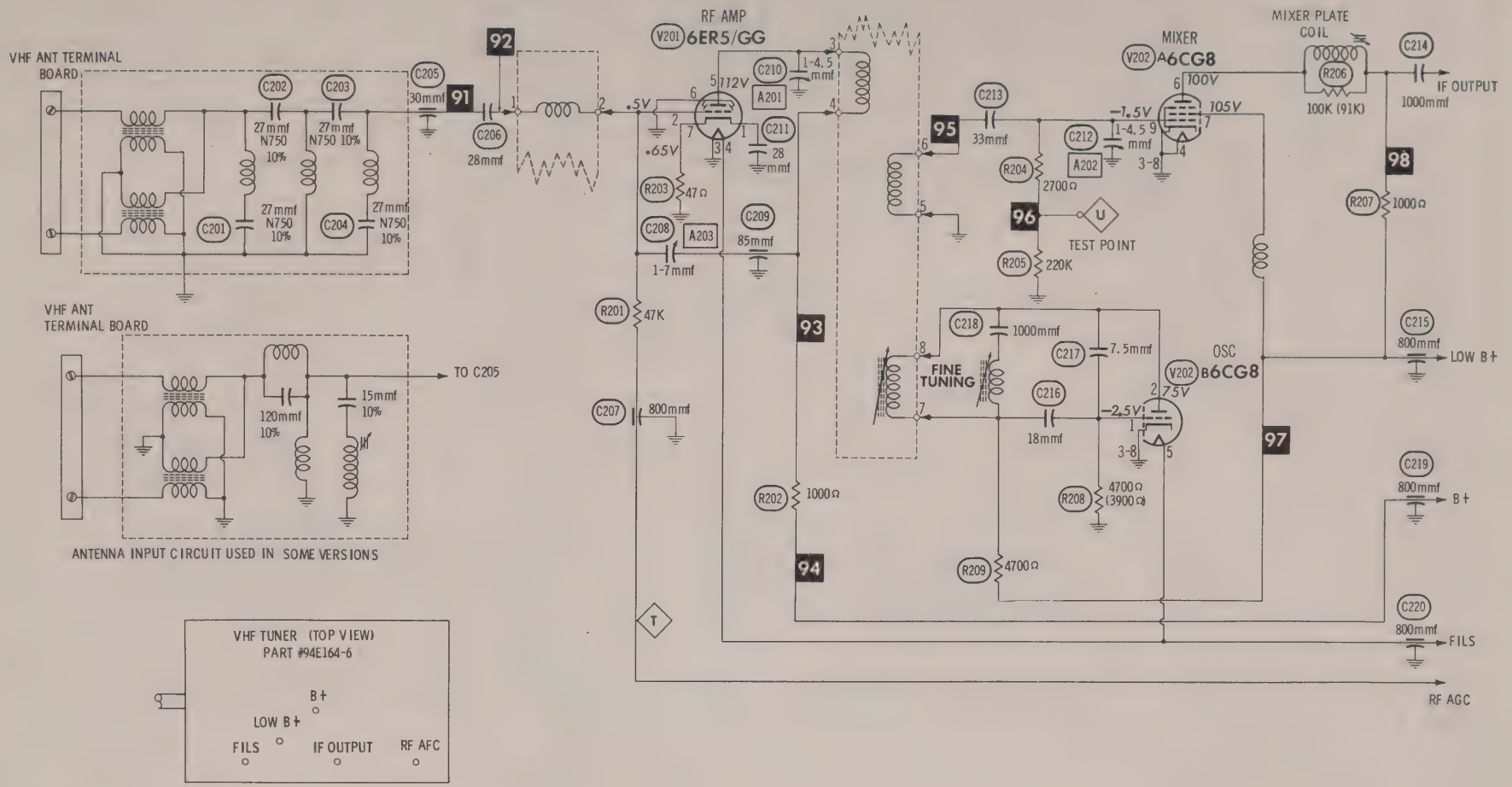
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V13
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

A Howard W. Sams CIRCUITRACE® Photo

VIDEO, SOUND, SYNC PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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VHF TUNER 94E164-6

TUNER ALIGNMENT INSTRUCTIONS

94E164-6

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point Ⓤ . Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

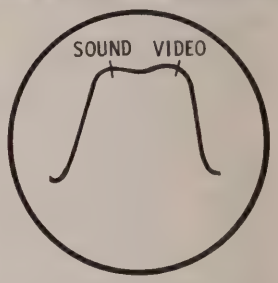


FIG. 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

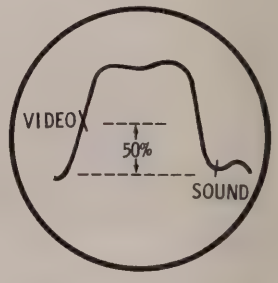


FIG. 202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A) thru a 10K resistor. Positive to chassis.
Connect a jumper across the antenna terminals.
Connect a 270mmf capacitor across the VTVM leads.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	41.25 MC (Unmod)	Any non-interfering channel	DC probe thru 47K to point (B). Common to chassis. (Across Video Det. load)	A1	Use high generator output. Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	A4, & Mixer Plate Coil	"
5.	"	"	41.5MC	"	"	A5	"
6.	"	"	42.0MC	"	"	A6	"
7.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Set Contrast fully clockwise.
If an external marker is used, couple loosely to sweep generator lead.
Connect a 270mmf capacitor across the scope leads.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43MC (10MC Swp)	41.25MC 42.0MC 43.5MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)		Check for response similar to Fig. 1 with markers as shown. If necessary, retouch Mixer Plate Coil to position 45.75 MC marker and A7 to position 43.5MC marker and to correct shape of curve.

SOUND IF ALIGNMENT

Tune in the strongest TV station available in the area. Adjust the set for normal operation.
Turn A8 slowly counterclockwise until a buzz is heard in the sound, then turn clockwise for maximum undistorted sound. (There may be two points approximately 1/2 turn apart at which the sound is loud. Set slug at center range of second loud point as slug is turned clockwise).
Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss is heard in the sound. Carefully adjust A9 and A10 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, reduce the signal more until the hiss returns and readjust A9 and A10. If the sound is unsatisfactory, repeat procedure.

4.5MC TRAP ALIGNMENT

Adjust A11 for MINIMUM 4.5MC beat pattern in the picture. (4.5MC beat interference appears as a very fine crosshatch pattern on the screen.)

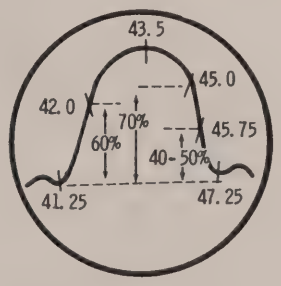
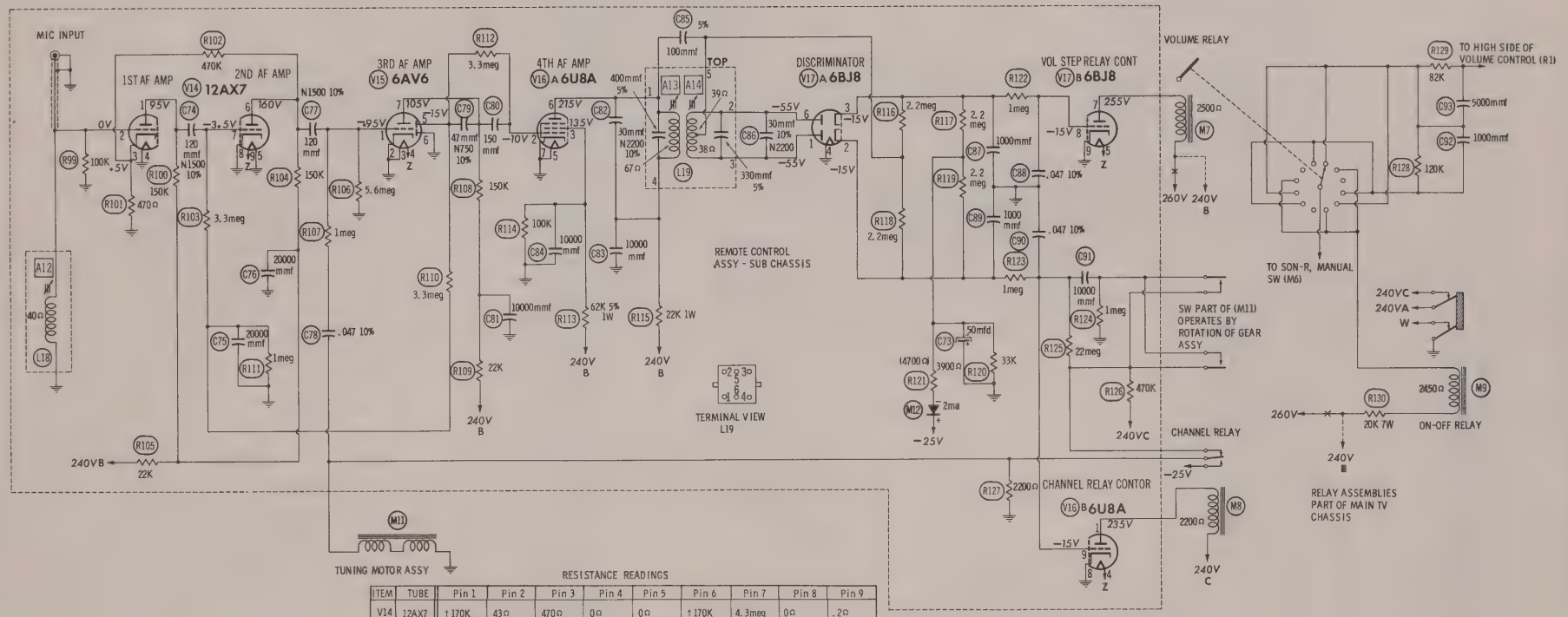


FIG.1



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V14	12AX7	†170K	43Ω	470Ω	0Ω	0Ω	†170K	4.3meg	0Ω	.2Ω
V15	6AV6	5.6meg	0Ω	0Ω	.2Ω	4.3meg	0Ω	†170K		
V16	6U8A	†2300Ω	7.6meg	†60K	.2Ω	0Ω	†22K	0Ω	0Ω	2.7meg
V17	6BJ8	2.5meg	1.8meg	1.8meg	0Ω	.2Ω	2.5meg	†2500Ω	3.2meg	0Ω

† MEASURED FROM 260V SOURCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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REMOTE CONTROL RECEIVER

TV
PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6CB6
V4	Video Output-Sound IF Amp.	6AW8A
V5	AGC Keying-Noise Limiter-Sync Sep.	6BU8
V6	Audio Det.	6DT6
V7	Audio Output	6AS5A
V8	Vert. Mult.-Vert. Output	6DE7
V9	Horiz. Mult.	6CG7
V10	Horiz. Output	6DQ6A
V11	Damper	6AX4GT
V12	HV Rect.	1G3GT/1B3GT

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V13	21CBP4A	21CBP4A ①	21CBP4-A ①	21CBP4/21CBP4A	21CBP4/21CBP4A ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲120	400	67D15-337			FP229.5		TVLS-2680 *	
B	▲120	400				TC80			
C2	50	350	67D15-226	AFH1-41	A0390	FP137	TMS-46	TVL-1622	
C3	40	200	67A4-21	PRS1580	BR4025	TC58	TD-40-250	TVA-1511	
C4A	■60	200	67D15-332	AFH3-84-60	B0576			TVL-3467	
B	▲5	200			BR835			TVA-1310	
C	100	50							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C6	1.0 100V		P288N-1.0		CUB2W1		GEM-21	2TM-M1
C7	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C8	20 NPO 2.5%	#65D6-143		TCZ-20				
C9	3-13	#66A38-7						
C10	15 NPO 2.5%	#65D6-140		TCZ-15				
C11	3-13	#66A38-7						
C12	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C13	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C14	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C15	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C16	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C17	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C18	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C19	560 N3300 5%	#65D6-131				*		
C20	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C22	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C23	3.3 NPO 5%		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C24	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C25	5000		BPD-005	DD-503	BYA10D5	CCD-502	GP250	5HK-D50
C26	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C27	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C28	.022 600V 10%		V84C6S22-10%		PM6S22	6DP-2-223	GEM-1612	6TM-S22
C29	.047 1000V		P1088N-047	DD-503	CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C30	.1 400V		P488N-1 ●	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C31	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C32	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C33	560		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C34	.047 1000V		P1088N-047	DD-503	CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C35	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C36	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C37	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C40	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C41	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C43	10000 1000V		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C44	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C45	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C46	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C47	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C48	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C49	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C50	.022 1000V 10%					16DP-4-224	GEM-1612	10TM-S22

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C81	1000		BPD-001	DD-102	BYA10DA	CCD-102	GPZ10	5HK-D10
C82	.01 600V		P688N-01	D6-103	CUB6R	6DP-2-103	GEM-611	6TM-SR
C83	.039 1000V 10%		P1084CM-039			16DP-S-403	GEM-1614	
C84	1 1000V	#84B2-53	P1088N-1		CUB10P1			10TM-P1
C85	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C86	.0068 600V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6366	6TM-D68
C87	15 400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C88	100 NPO 5%			DTZ-100	C10TIC	CM-30B-10JJ	CND-S10	10TCC-T10
C89	1000 10%		D1-1000	DD-102	P1M5D1	CCD-102	GPZ10	10TS-D10
C90	1000		BPD-001	DD-102	BYA10DA	CCD-103	GPZ10	5HK-D10
C91	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C92	.047 200V		P388N-047	DD-503	CUB3R47	4DP-3-473	GEM-4147	3TM-S47
C93	3900 10%		1464-009		1R5D39	CM-30B-392K	MC3462.5	MS-239
C94	820 10%		1469-00082	DD-821	1R8T82	CM-30B-821K	MCB451	MS-382
C95	680 10%		1469-00068	DD-681	1R8T68	CM-30B-681K	MCJ349	MS-368
C96	4700		BPD-0047	DD-473	BYA10D47M	CCD-473	GP247	5HK-D47
C97	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C98	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-S-473	GEM-10147	10TM-S47
C99	.18 1000V 10%	#84B2-54						
C70	70 2000V NI500 10%	#65DK0-209						
C71	15 2000V NI500 10%	#65DK0-213						
C72	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Admiral Part No. * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	76B44-4			B18-140X ▲	PP36DT26 ♦	Volume, 1.5meg tap
B	Switch							Push-Pull Off-On
R2	100K	½	75B54-1					Brightness, Note 1
R3	25K	½	75D20-126					Contrast, 12.5K tap
R4A	5meg	½	75B17-34		RTV-694	†(QJ-1149	UE4087 ▲	Tone
B	300K	½						Vert. Hold, Note 3
R5A	100K	½	75D20-118	AB-3S	B47-100K-S	B17-128	PTA15L	AGC
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6A	50K	½	75D20-127	BK-3L ♦	B47-50K-S*	B11-123 ♦	PTA34L ♦	Horiz. Range, Note 3
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	1000Ω	½	75D20-136	AB-5	B47-1500-S	B11-108	SU-6	Vert. Lin.
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R8A	5meg	½	75D20-119	AB-S7	B47-5meg-S	B11-141	PTA56L	Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.	

* Remove shunting resistor. ▲ "STA-LOC" equivalent: FA56A, RU352, OS1562A, E2062.

Note 1. Alternate Part #75C54-1.
Note 2. Some versions may use 500K Vert. Hold (Part #75D23-105).
Note 3. Some versions may use 45K range control.
† "Concentrikit" Equivalent: K-6 Kit with Base Elements & Shafts: B13-141, PAT-118 (Panel) B11-131, RI-130 (Rear)
(Not available as a factory assembled unit.)

▲ Use shaft Part #SK8.
♦ Use shaft Part #D8-37.
◆ Do not use Tap #1.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	3meg 5%	
R10	10meg	
R11	56000Ω 7W	#61B34-443
R12	22K 3W	
R13	18000Ω	
R14	2. 2meg	
R15	150K	
R16	1000Ω	
R17	4700Ω	
R18	39K	
R19	470Ω	
R20	47Ω	
R21	22K	
R22	4700Ω	
R23	470Ω	
R24	220K	
R25	220K	
R26	68Ω	
R27	470Ω	
R28	150Ω	
R29	33000Ω	
R30	100K	
R31	47K	
R32	18K	
R33	47K 1W	
R34	120K	
R35	56000Ω 7W	#61B34-443
R36	33K	
R37	56K	
R38	47K	

ITEM No.	RATING	REMARKS
R39	82000Ω	
R40	82K	
R41	39K	
R42	100K	
R43	470K	
R44	1meg	
R45	27K	
R46	100K	
R47	56K	
R48	560K	
R49	82000Ω	
R50	680Ω	
R51	47K	
R52	100Ω	
R53	1meg 5%	
R54	1meg 5%	
R55	220Ω 2W	
R56	10K 3W	
R57	82000Ω 1W	
R58	47K	
R59	12meg	
R60	100K	
R61	180K	
R62	68K	
R63	33K	
R64	820K	
R65	2. 2meg	
R66	68K	
R67	2. 2meg	
R68	2. 7meg	

ITEM No.	RATING	REMARKS
R69	22K	
R70	82K 1W	
R71	100K	
R72	3300Ω 1W	
R73	4700Ω 2W	
R74	120K	
R75	47K	
R76	330K	
R77	330Ω	
R78	330Ω	
R79	120K 1W	
R80	100K 1W	
R81	2. 2meg	
R82	680K	
R83	680K	
R84	1meg	
R85	100K	
R86	56K	
R87	10K	
R88	27K	
R89	180K	Note 1
R90	82K	
R91	22K	
R92	1100Ω 4%	
R93	100Ω	
R94	1meg	
R95	15K 3W	
R96	1Ω	
R97	100K	Note 2
R98	470K	

Admiral Part No. Note 1. Not used when Range Control is 45K. Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	41.25MC Trap Coil	73B37-4						
L2	47.25MC Trap Coil	73B37-4						
L3	1st Video IF	73C132-31						
L4	2nd Video IF	73C132-39						
L5	3rd Video IF	73C132-39						

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L6	4th Video IF	73Z191-3 †						12uh
L7	RF Choke	73B31-4						38uh, ①
L8	Shunt Peaking Coil	73C5-41	19-4400 ♦	19-4400 ♦	TV-302 ♦	6136 ♦		28uh
L9	RF Choke	73B31-3						
L10A	4.5MC Trap	73C165-2						
B	1st Sound IF Trans.							
L11	Shunt Peaking Coil	73C5-20	19-3500	19-3500	TV-188	6174	VP-8	533uh
L12	Series Peaking Coil	73C5-40	19-4301 ††	19-4301 ††	TV-197 ††	6154 ††	VP-5 ††	10uh, ③
L13A	2nd Sound IF	73C208-1						
B	Phase Shift Coil							
L14	Quadrature Coil	73C182-37						
L15	Fil. Choke	73B37-2	19-1001	19-1001	BC-562	4604		1.4uh

① Wound on 2700Ω resistor.
③ Wound on 12K resistor.
† Includes C23, C34, & M5.
♦ Parallel with 2700Ω resistor.
†† Parallel with 12K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L16	100Ω		94C17-7	HS-5 ①	TV-163 ③	6210 ①	H-102 ①	HS-5 ①	① Enlarge mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE @ CURRENT	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L17	.230A	65Ω	1.7 Hy. 1000 ~	74C18-34 ①	26C44	C-2996 ②	F-800 ②	C-2328 ②	26C44	C-23X

① Alternate Part #74B18-34. ② Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ④ 2.4A * 1.9A †	240V ⑤ .240A	24V ⑥ 2.6A tap @6.3V ⑥ 1.6A	80D71-1						

* Tuning. † Not Tuning

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	79C43-22	26873	A-3854	V307 ①	VO34 ①	VO-100 ②	26873	A-118X ③
	Alt. Vert. Output	79B43-22	26873	A-3854	V307 ⑦	VO34 ①	VO-100 ②	26873	A-118X ③
T3	Yoke-Horiz. (18.6MH) (90°) -Vert. (34MH)	94D169-2	Y-16 ④⑤ ⑥	MDF-92 ④ ⑤⑥	Y90F19/43 ④⑤⑥	PCM2045 ④⑤⑥	DY-18A ④ ⑤	Y-16 ④⑤ ⑤	Y-41 & NW-11 ④ ⑤⑦
	Alt. Yoke	94D169-1	Y-16 ④⑤ ⑥	MDF-92 ④ ⑤⑥	Y90F19/43 ④⑤⑥	PCM2045 ④⑤⑥	DY-18A ④ ⑤	Y-16 ④⑤ ⑤	Y-41 & NW-11 ④⑤⑦
	Rear Cover & Centering Device	84B12-1							YC-1 & CL-1
	Yoke Clamp	18A220-2							
T4	Horiz. Output	79D77-8		HVO-167					D-191
	Alt. Horiz. Output	79B77-6		HVO-167					D-191

① Connect as autoformer.
② Cut and tape red/yellow lead.
③ Use 8 to 1 turns ratio.
④ Use original rear cover and centering device.
⑤ Use original yoke damping network.
⑥ Mount with leads out bottom and connect same as orig.
⑦ Requires additional 70mmf @ 2KV and 15mmf @ 3KV damping capacitors.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	8000Ω	3-4Ω	79B61-6	24S05	A-2900	AU-608	A-3856	24S05	S-7X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	78B139-15	5A1	Models T822M40, 41, 42, 43
	6"	PM		78B134-7	"	Models C822M41, 42, 43, 44
	8"	PM		78B134-14	"	Models L822M42, 43, 44

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: ADMIRAL PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.340A	93C18-1			312A		Selenium Type.
M2	Signal	93B8-6		K1616			Dual Sel. Diode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ADMIRAL PART No. FUSE	ADMIRAL PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	1 3/4" LONG TR OF #20 WIRE							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N87		1N536	1N295	1N295	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94R164-6	VHF
M6	Switch	77B89-8	Sen-R Manual (DPDT Slide Type)
M7	Relay	83B14-3	Volume Step (Includes Switch)
M8	Relay	83B27-1	Channel
M9	Relay	83C26-3	Off-On
M10	Circuit Breaker	84B17-5	Note 1
M11	Motor & Gear Assy.	91C35-6	Tuning, Sets Stamped Nos 10 and Nos 11, Note 2
	Microphone	73B147-1	Sen-R (Includes plug and cable)
	Microphone	59A77-3	Includes plug and cable
	Printed Board	A7605-1	Includes components less tubes
	Printed Board	A7610-1	Sweep, (Includes components, less tubes)
	Sen-R Tuner	82A	Used in early models
	Sen-R Tuner	83B	Used in later models

Note 1. Some versions may use an "N" Type 1A 125V 8/5 fuse (Part #84A13-40) in this application.
Note 2. Chassis stamped run 12 or higher use Part #91C45-4 or #1D81-4 in this application.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	2D111-5	
Knob	20C39-2	VHF Channel Selector
Knob	33C355-2	UHF Channel Selector
Knob	33C355-1	VHF Fine Tuning
Knob	20C35-1	Volume "
Knob	33C356-1	Brightness, Tone
Knob	20C31-1	Contrast, Vert. Hold
Cabinet	35Z555-1	Model C822M41
Cabinet	35Z555-2	Model C822M42
Cabinet	35Z556-3	Model C822M43
Cabinet	35Z556-4	Model C822M44
Cabinet	34Z145-5	Model T822M40
Cabinet	34Z145-6	Model T822M41
Cabinet	34Z145-7	Model T822M42
Cabinet	34Z145-8	Model T822M43
Cabinet	35Z559-2	Model L822M42
Cabinet	35Z559-3	Model L822M43
Cabinet	35Z559-4	Model L822M44
Cabinet Leg	37D168-52	Model C822M42
Cabinet Leg	37D168-53	Model C822M43
Cabinet Leg	37D168-55	Model C822M44
Cabinet Leg	35Z554-51	Model L822M42
Cabinet Leg	35Z559-52	Model L822M43
Cabinet Leg	35Z559-53	Model L822M44

WIRING DATA

High Voltage Lead	Use BELDEN No. 8969
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor)
	8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8474
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8276
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor
	8485 (Round) - 5 Conductor
	8488 (Round) - 8 Conductor

ADMIRAL MODELS C822M41, 42, 43, 44, L822M42, 43, 44, T822M40, 41, 42, 43 (ch. 2076)

FOLDER 1

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V14	1st Amp. -2nd Amp.	12AX7
V15	3rd Amp.	6AV6
V16	4th Amp. -Channel Relay Control	6U8A
V17	Discriminator-Volume Step Relay Control	6BJ8

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C73	50	25	67B4-45	PRS1265	BBR50-25	TC29	TD-50-25	TE-1209	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C74	120 N1500 10%	#65D10-136				*		
C75	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C76	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C77	120 N1500 10%	#65D10-136				*		
C78	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C79	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C80	150		BPD-00015	DD-151	L10T15	CCD-151	GP315	10TS-T15
C81	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C82	30 N2200 10%	#65D10-189				*		
C83	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C84	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C85	100 5%		1469-0001	TCZ-100	22R5T1	CM-20B-10LJ	MCE235	MS-310
C86	30 N2200 10%	#65D10-189				*		
C87	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-S10
C88	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C89	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C90	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C91	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C92	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C93	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50

Admiral Part No. * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R99	100K	
R100	150K	
R101	470Ω	
R102	470K	
R103	3.3meg	
R104	150K	
R105	22K	
R106	5.6meg	
R107	1meg	
R108	150K	
R109	22K	

ITEM No.	RATING	REMARKS
R110	3.3meg	
R111	1meg	
R112	3.3meg	
R113	62K 5% 1W	
R114	100K	
R115	22K 1W	
R116	2.2meg	
R117	2.2meg	
R118	2.2meg	
R119	2.2meg	
R120	33K	

ITEM No.	RATING	REMARKS
R121	3900Ω	(4700Ω)*
R122	1meg	
R123	1meg	
R124	1meg	
R125	22meg	
R126	470K	
R127	2200Ω	
R128	120K	
R129	82K	
R130	20K 7W	

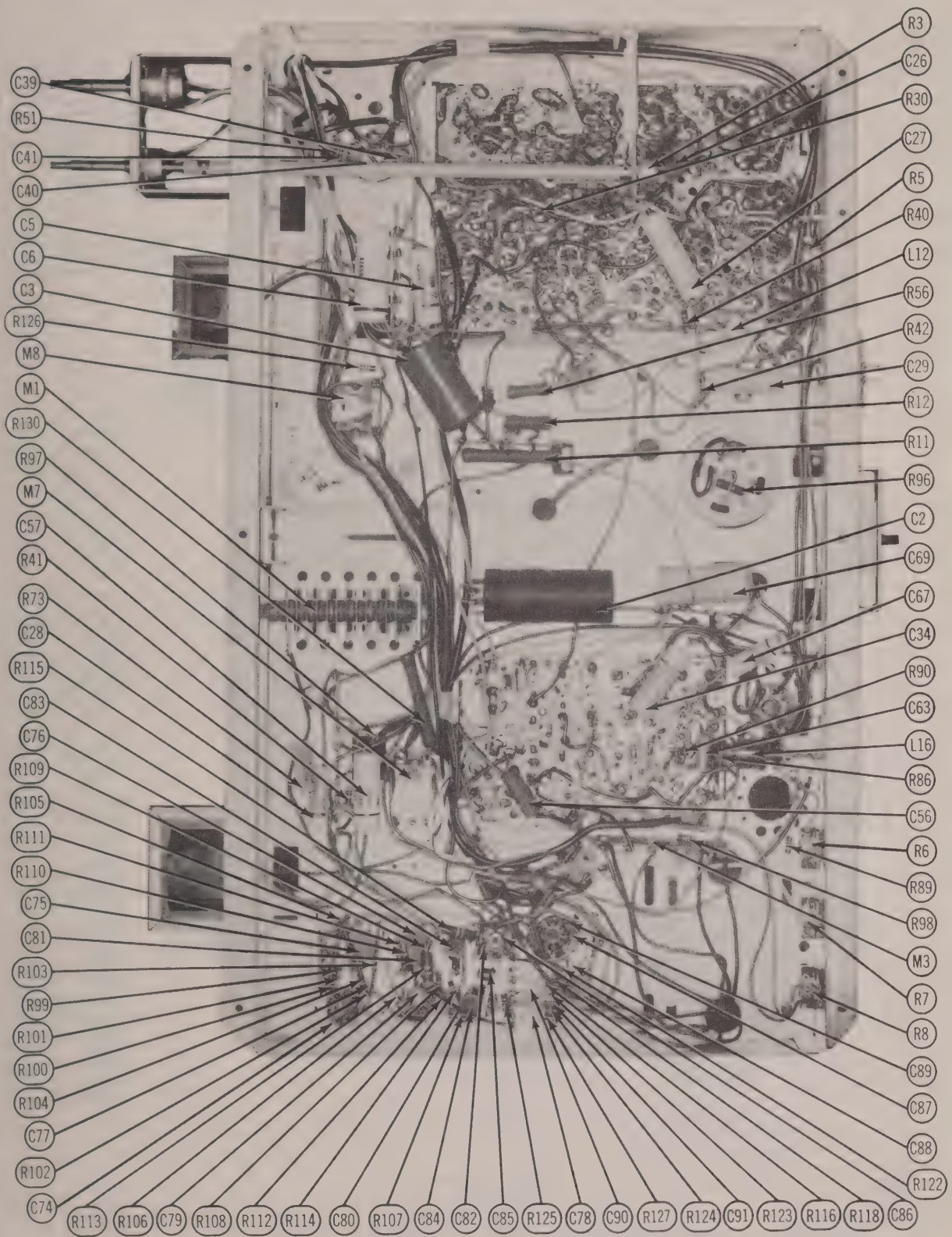
* Alternate value.

COILS (RF-IF)

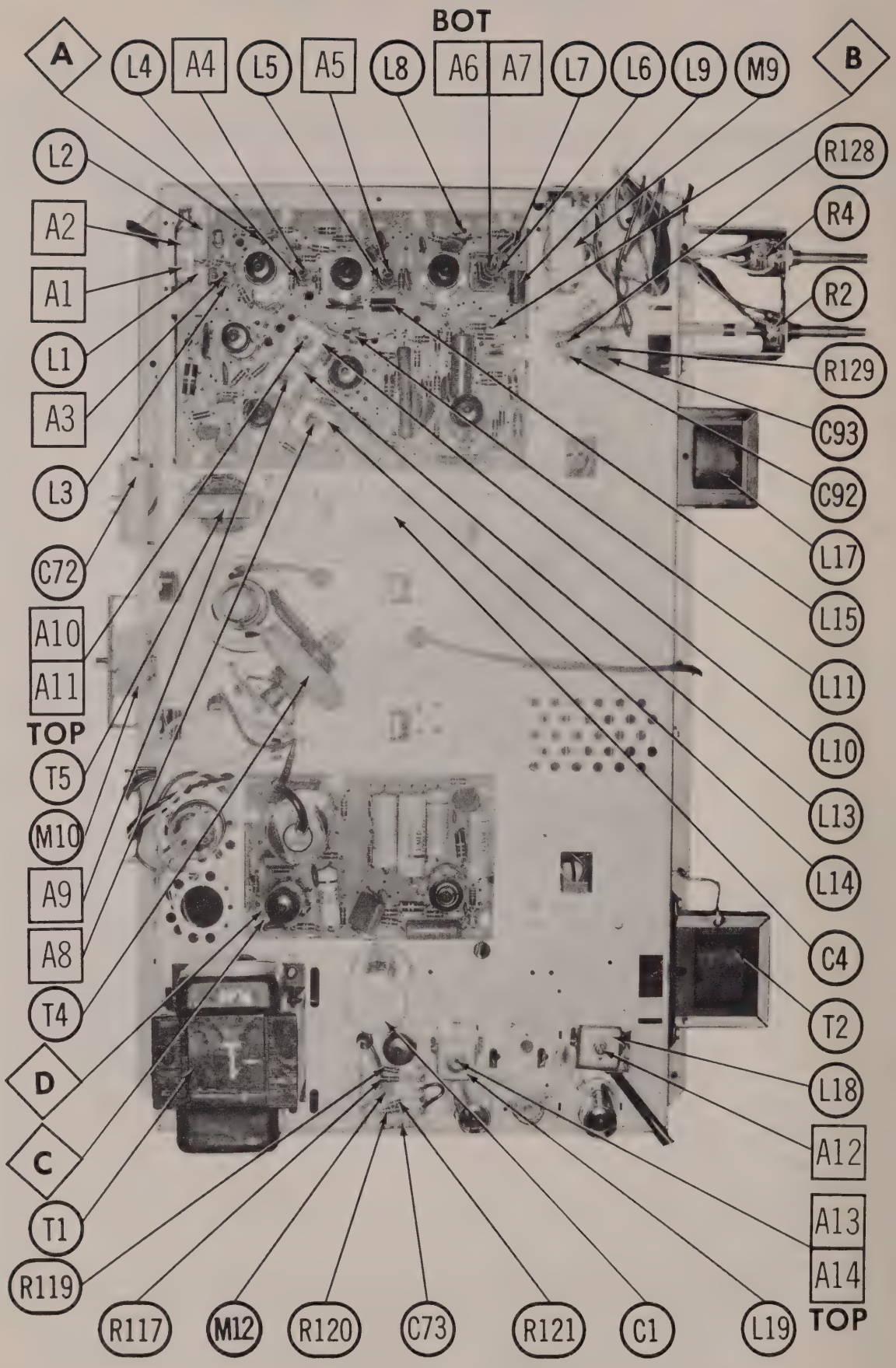
ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L18	1st Amp. Input Coil	69C230-2						
L19	Discriminator	69C231-5						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ADMIRAL PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M12	.002A	93B15-1	D-5410	1159	12		Selenium Type.



CHASSIS BOTTOM VIEW



CHASSIS TOP VIEW

REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

REMOTE CONTROL ALIGNMENT

Signal generator to be used must be crystal control to within ± 20%.
Unsolder B+ (red lead) from Volume Step Relay (M7) and Channel Relay (M8). Tape ends of wire to prevent shorting.
Disconnect microphone.
Set Son-R Manual switch (M6) to Son-R position.
Allow a 20 minute warm-up period for the receiver and test equipment.
All connections should be made from top of chassis. Bottom shield must be in place.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru shielded 820mmf (Fig. 2) to microphone input cable. Low side to chassis.	38.285KC (Unmod)	Any non-interfering channel	DC probe to pin 2 (grid) of 4th Amp. Common to chassis.	A12	Adjust for maximum deflection.
2.	"	"	"	DC probe to pin 8 (grid) of Volume Step Relay Control. Common to chassis. (Use negative scale).	A13, A14	Adjust in numerical order for MINIMUM deflection. Repeat adjustment while reducing signal level.

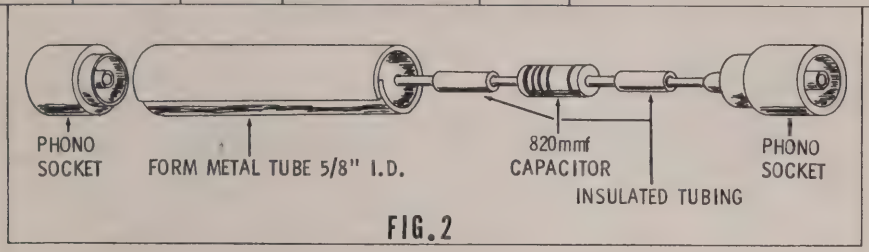


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

94E164-6

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5/GG	V202	Mixer-Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28		NPO-DI 25	TCN-27	C10Q27C	CCTO-270	CN7-427	10TCC-Q27
C207	800		EF-001	MFT-1000		CCF-102	CT280A	
C208	1-7			829-7				
C209	85							
C210	1-4.5			829-6				
C211	28		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C212	1-4.5			829-6				
C213	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C214	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C215	800		EF-001	MFT-1000		CCF-102	CT280A	
C216	18		NPO-DI 20	TCZ-18	C10Q18C	CCTO-180	CNO-418	CCTO-Q18
C217	7.5			DD-7R5	C10V8C		GP580	10TS-V75
C218	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C219	800		EF-001	MFT-1000		CCF-102	CT280A	
C220	800		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

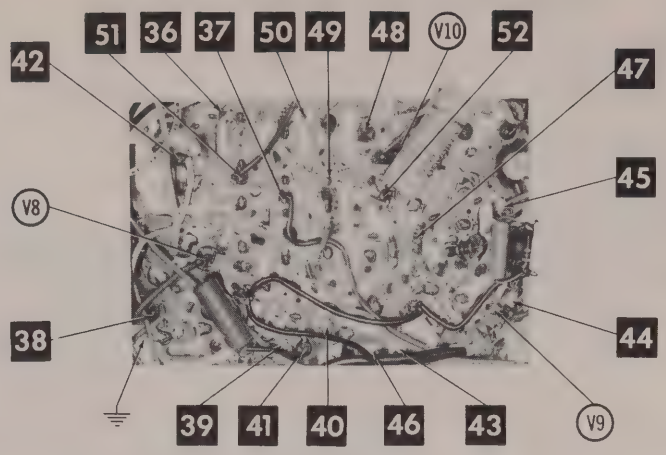
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	47Ω	

ITEM No.	RATING	REMARKS
R204	2700Ω	
R205	220K	
R206	100K	(91K) *

ITEM No.	RATING	REMARKS
R207	1000Ω	
R208	4700Ω	(3900) *
R209	4700Ω	

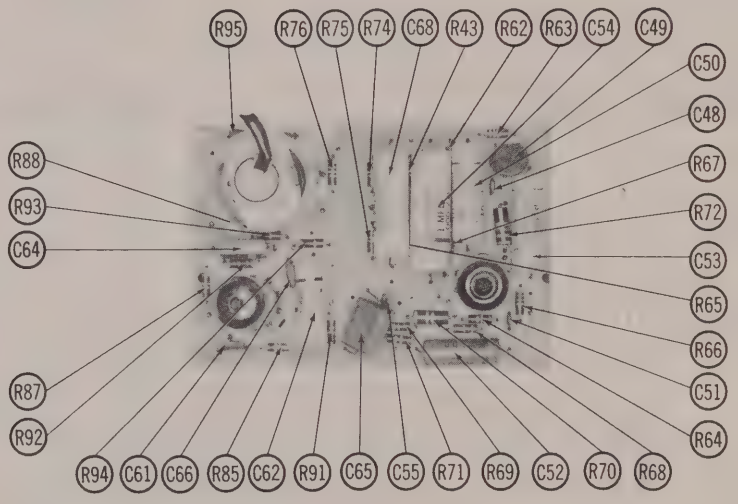
* Alternate Value.



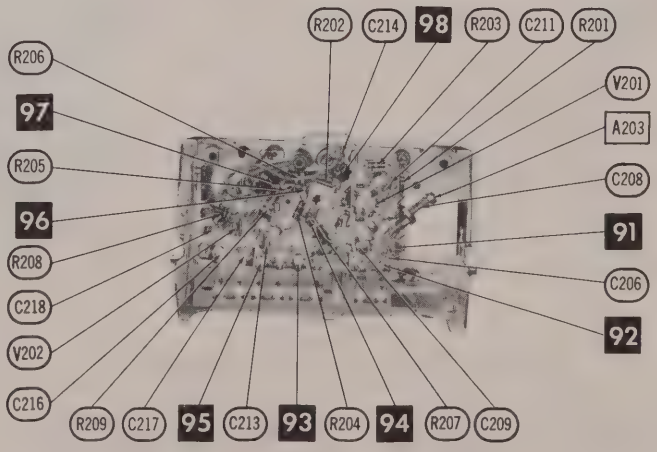
A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

SWEEP PRINTED BOARD - BOTTOM VIEW



SWEEP PRINTED BOARD - TOP VIEW



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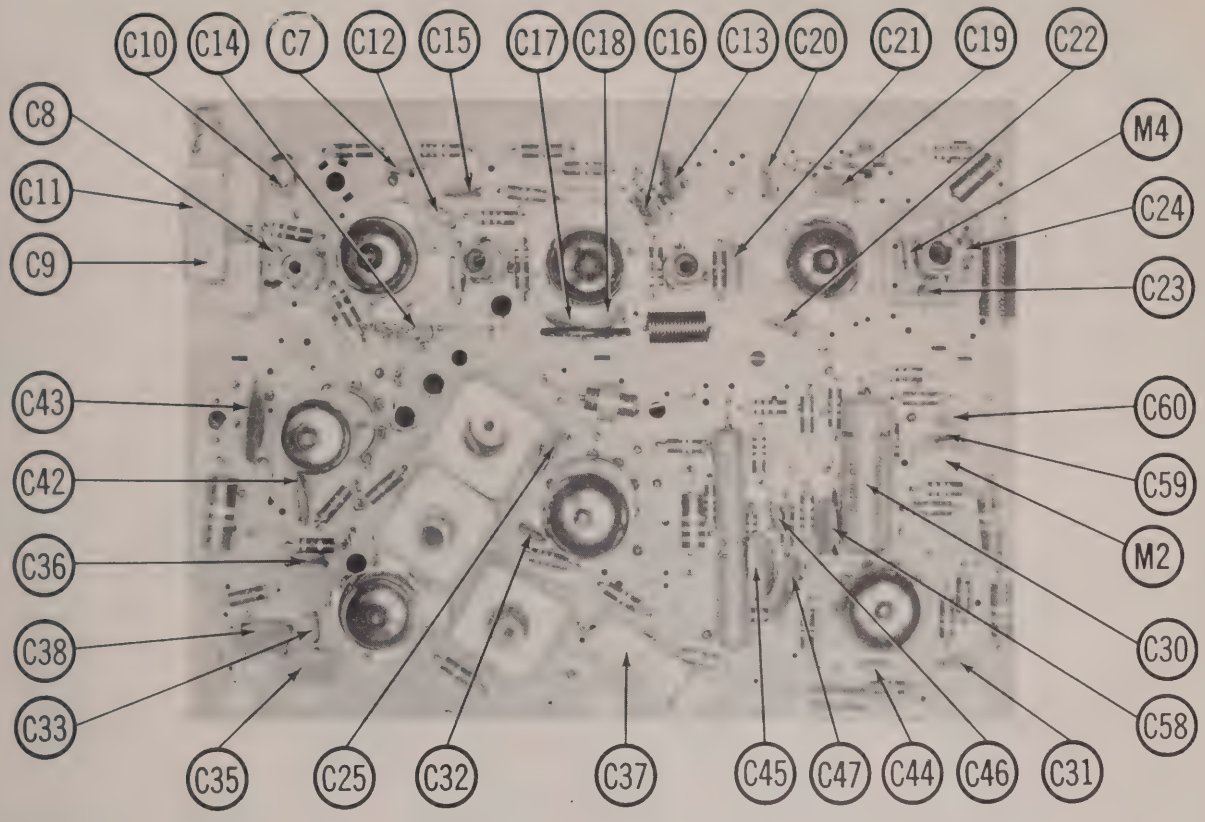
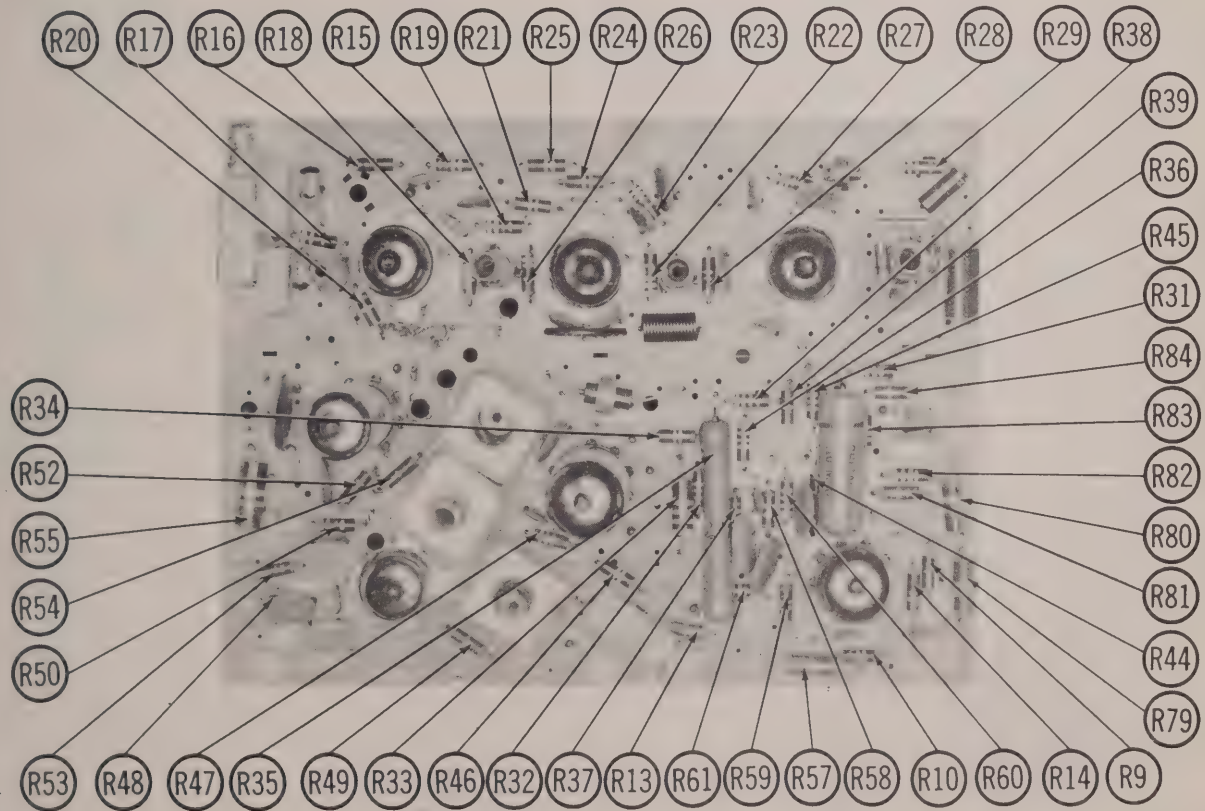
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER 94E164-6 - BOTTOM VIEW

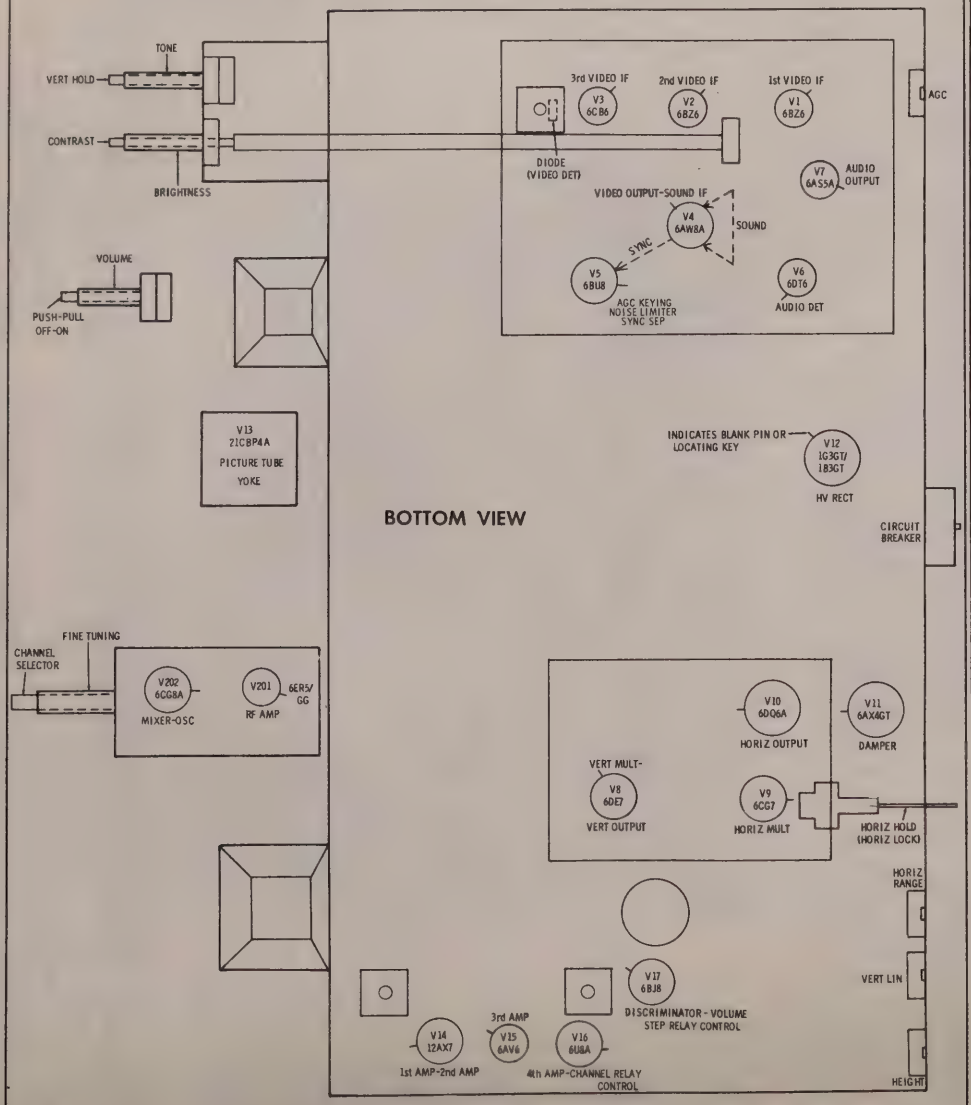


VIDEO, SOUND, SYNC PRINTED BOARD - CAPACITOR & MISC IDENT.



VIDEO, SOUND, SYNC PRINTED BOARD - RESISTOR IDENT.

TUBE PLACEMENT CHART

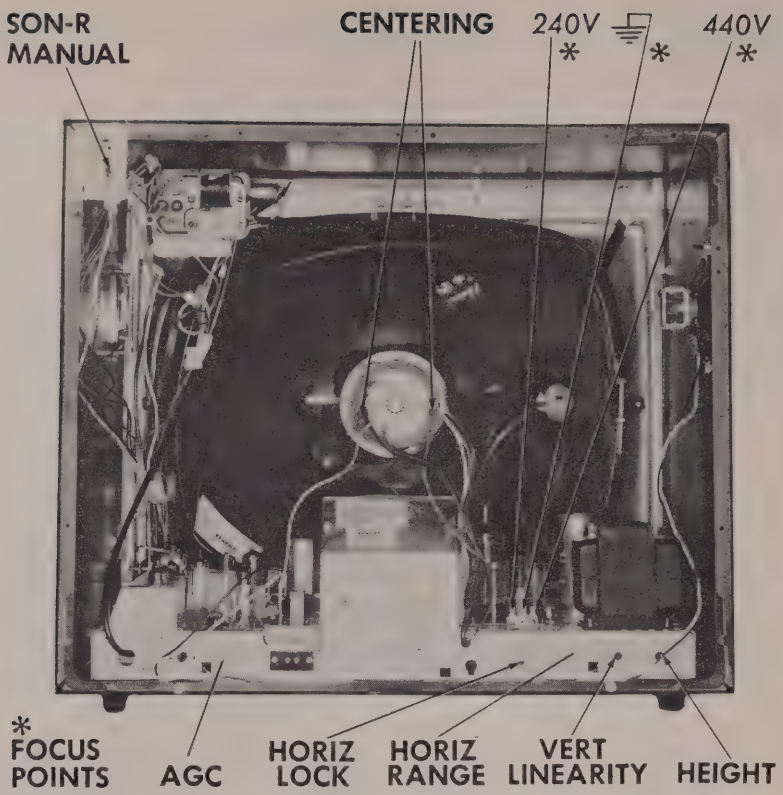


RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.2Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	6BZ6	120K	▲ 68Ω	.2Ω	0Ω	† 535Ω	† 535Ω,	140K		
V3	6CB6	.2Ω	150Ω	0Ω	.2Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	0Ω	100K	■ 50K	0Ω	.2Ω	0Ω	3300Ω	† 30K	† 5600Ω
V5	6BU8	■ 0Ω	† 8200Ω	2.3meg	0Ω	.2Ω	† 25K	† 1meg	† 47K	† 12meg
V6	6DT6	15Ω	680Ω	.2Ω	0Ω	†890K	■ 8200Ω	560K		
V7	6AS5A	¶	500K	0Ω	.2Ω	500K	† 220Ω	† 530Ω		
V8	6DE7	† 795Ω	1.6meg	1.6meg	.2Ω	0Ω	● †5.2meg	820K	● 250K	● 700Ω
V9	6CG7	† 10K	2.5meg	1100Ω	0Ω	.2Ω	† 82K	● 40K	1100Ω	0Ω
V10	6DQ6A	NC	0Ω	NC	† 15K	1meg	NC	.1Ω	0Ω	TOP CAP †14Ω
V11	6AX4GT	NC	NC	¶750K	NC	† 65Ω	TP	.1Ω	0Ω	
V12	1G3GT/1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †464Ω
V13	21CBP4	.1Ω	39K	Pin 6 †90K	Pin 10 † 100K	Pin 11 ● 100K	Pin 12 0Ω			
V201	6ER5/GG	47Ω	4meg	0Ω	.2Ω	† 6500Ω	0Ω	47Ω		
V202	6CG8A	4700Ω	6500Ω	0Ω	0Ω	.2Ω	2800Ω	1800Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM PIN 7 OF V7.
† MEASURED FROM 260V SOURCE.
† MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

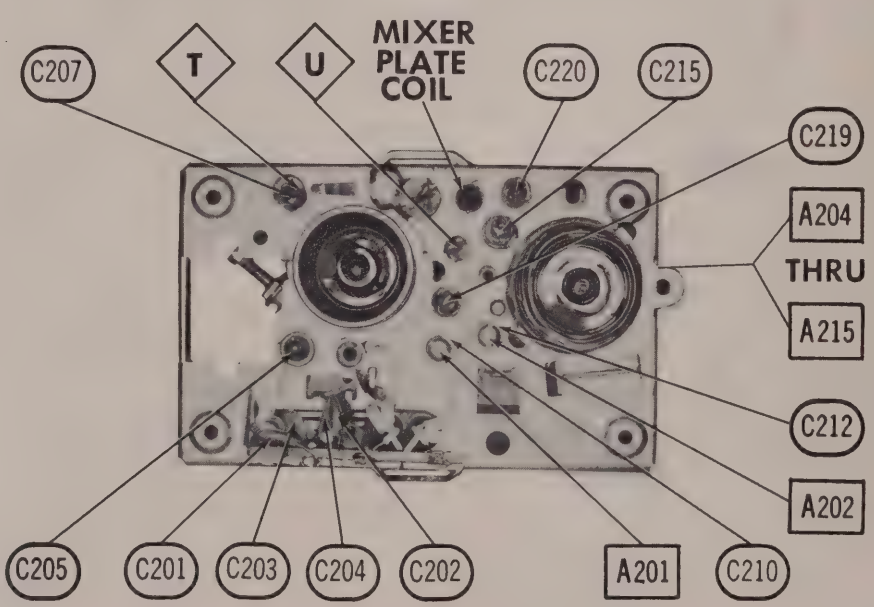
Adjust the Brightness and Contrast controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from point Ⓒ to chassis. Connect a .22mfd, 400 volt capacitor from point Ⓓ to chassis.

Adjust Horizontal Range to the point where the picture is almost stable horizontally.

Remove the capacitor from point Ⓓ and adjust the Horizontal Lock to the point where the picture is almost stable horizontally.

Remove the clip lead from point Ⓒ and chassis. Adjust the Horizontal Lock until the picture is synchronized horizontally.



TUNER 94E164-6—TOP VIEW

PHOTOFACT® Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

MODEL M3703 (Ch. 426, 1139)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT® Folder with CIRCUITRACE®

HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

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MODEL M3703 (Ch. 426, 1139)

HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

TRADE NAME	Hoffman Models M3703, SP3703, W3703 (TV Ch. 426, Stereo Amp. Ch. 1139)
MANUFACTURER	Hoffman Electronics Corporation, Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles, Calif.
TYPE SET	Television Receiver with Stereo Amplifier
TUBES	TV: Seventeen, Stereo Amplifier: Five
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 271 Watts, 2.5 Amp. @ 117 Volts AC (TV & Amplifier) 66 Watts, .68 Amp. @ 117 Volts AC (Amplifier only)
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location see "Amp. Chassis — Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up VHF Oscillator, remove Channel Selector knob, front tuner escutcheon and Fine Tuning knob.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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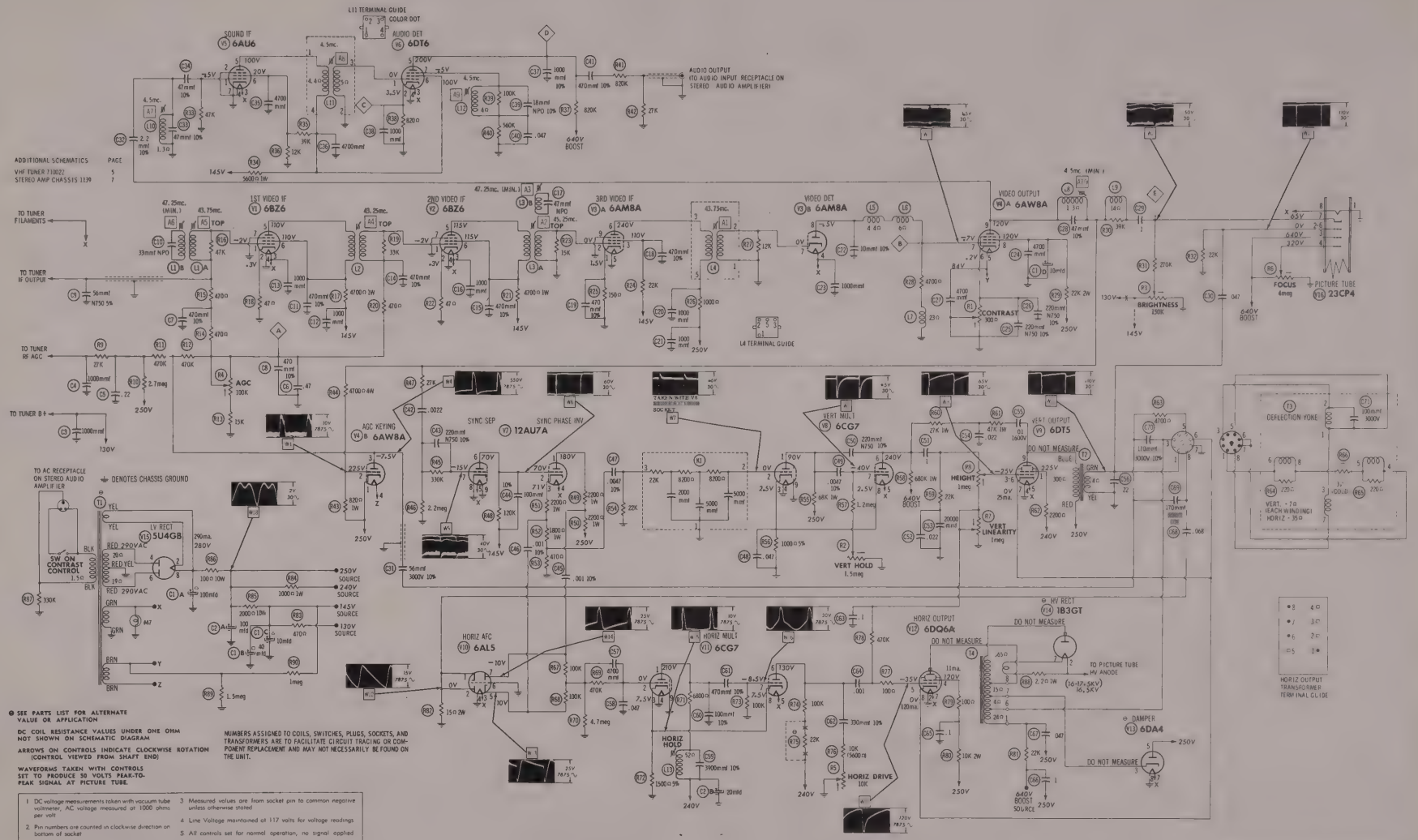
SET 478 FOLDER 2



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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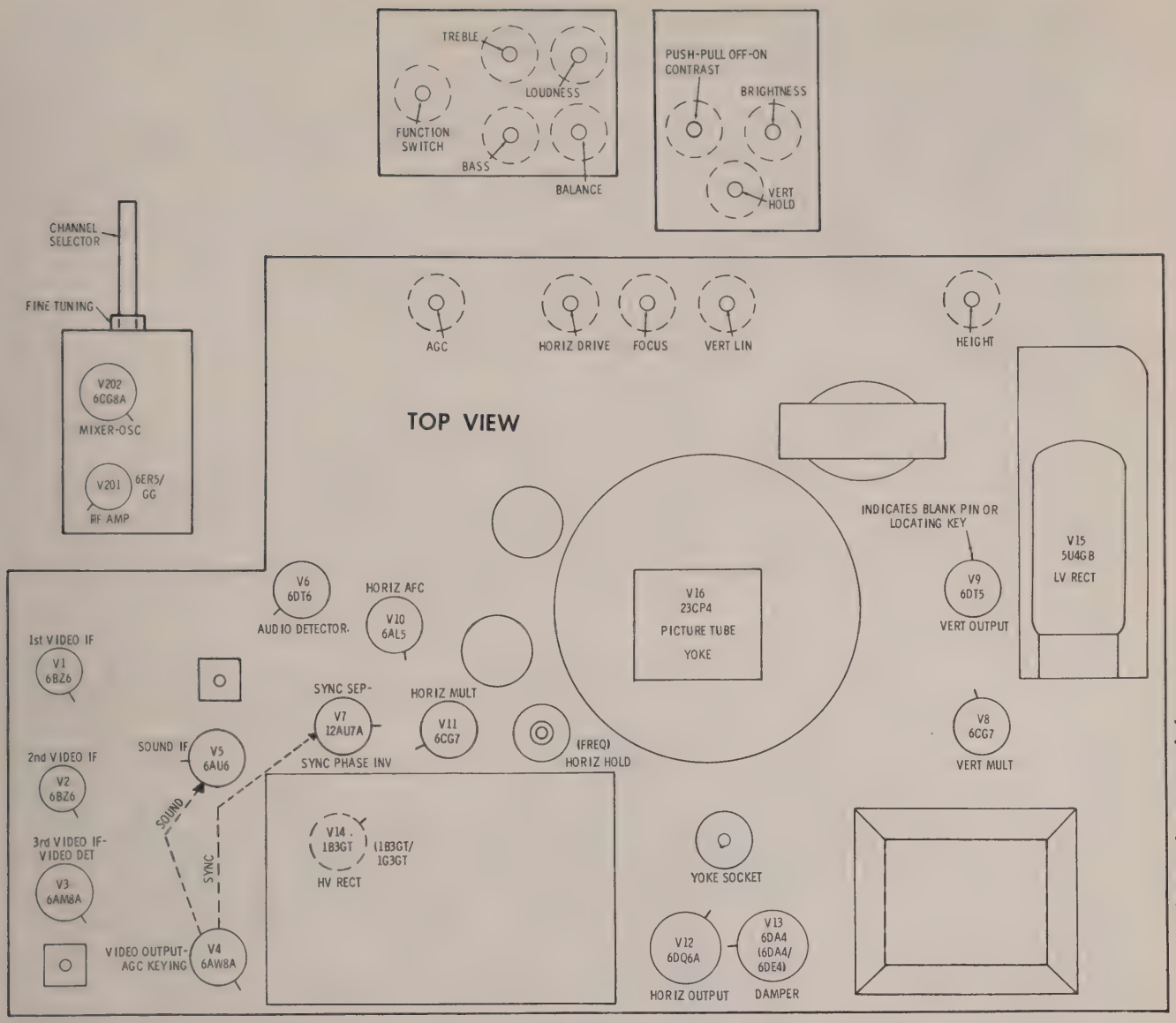
HOFFMAN MODELS M3703, SP3703, W3703, (Ch. 426, 1139)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V15

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V8
Horiz. off freq. V10, V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V5, V6
Overloaded picture V4

SYNC FAILURE
No vert. sync V7
No horiz. sync V7
No vert. or horiz. sync V7

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Connect bias as under "Video IF Alignment".
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect a 1000mmf capacitor across VTVM and scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	43.75MC	Set Selector Between Channels	USE VTVM DC probe thru 10K to point (B). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	45.5MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between channels	DC probe thru 10K to point (C). Common to chassis.	A7, A8	Detune A9 by turning core fully clockwise. Adjust A7 and A8 for maximum deflection. Reduce the signal generator output to keep meter reading between 3.5 and 4.5 volts at all times.
10.	"	"	"	DC probe thru 10K to point (D). Common to chassis	A9	Increase generator output to maximum and adjust A9 for MINIMUM deflection. Continue turning core counter-clockwise until meter reads from 97 to 103 volts.
11.	Tune in a TV station and if necessary, retouch A9 SLIGHTLY for undistorted sound.					

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point (E). Common to chassis.	A10	Adjust for MINIMUM deflection.

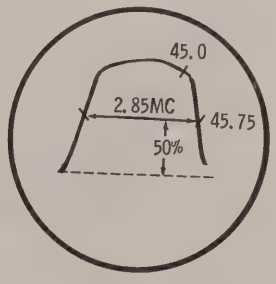
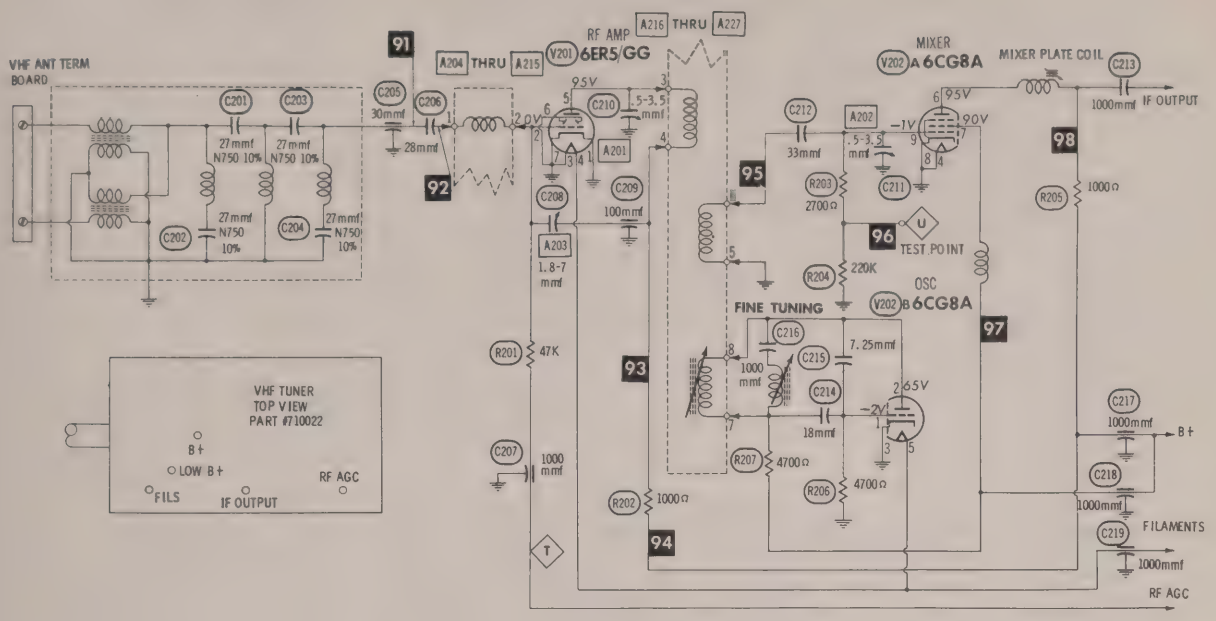


FIG. 1

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 16



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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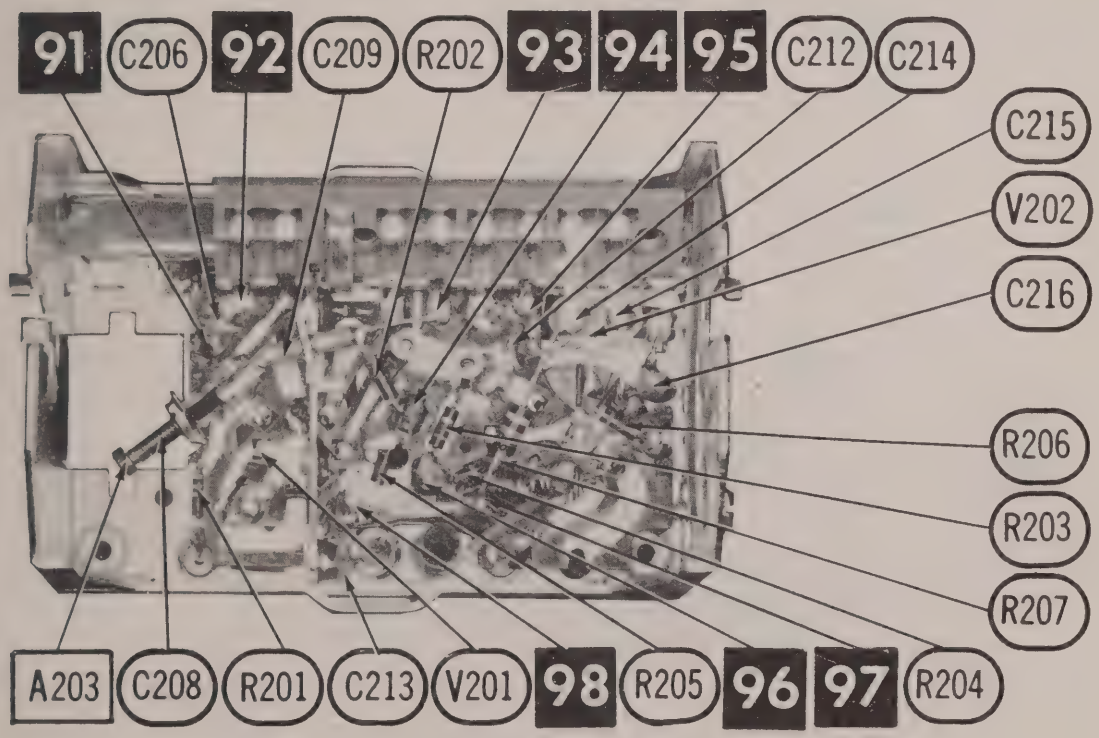
VHF TUNER 710022



A Howard W. Sams CIRCUITRACE Photo

TUNER 710022 - BOTTOM VIEW

FOLDER 2

TUNER PARTS LIST AND DESCRIPTIONS

710022

TUBES

• CBS •		GENERAL ELECTRIC •		RAYTHEON •		SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE		
V201	RF Amp.	6ER5/GG	V201	Mixer-Osc.	6CG8A		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28		NPO-DI 25	TCN-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7			829-7				
C209	100			MFT-100				
C210	.5-3.5							
C211	.5-3.5							
C212	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C213	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C214	18		NPO-DI 20	TCZ-18	C10Q18C C10V7C	CCTO-180	CNO-418	10TCC-Q18 10TS-V75
C215	7.25							
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

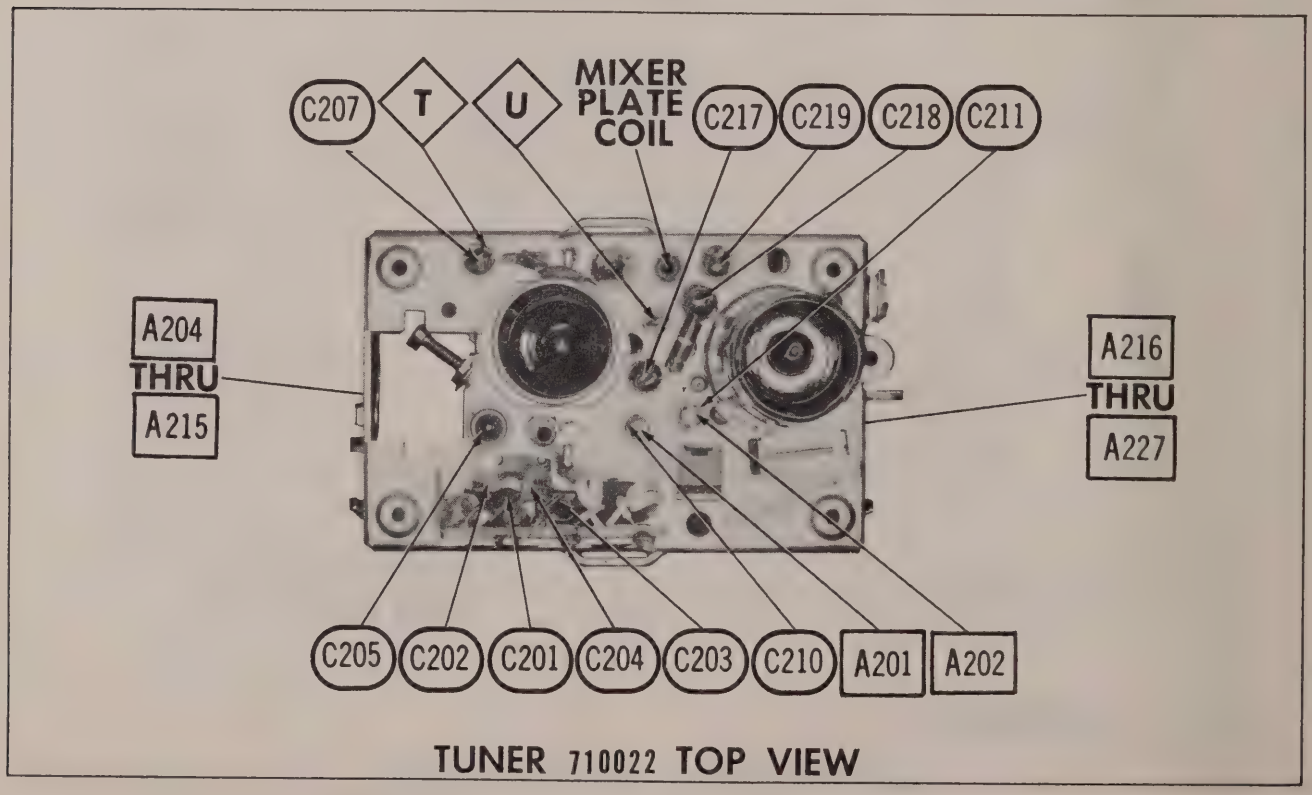
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

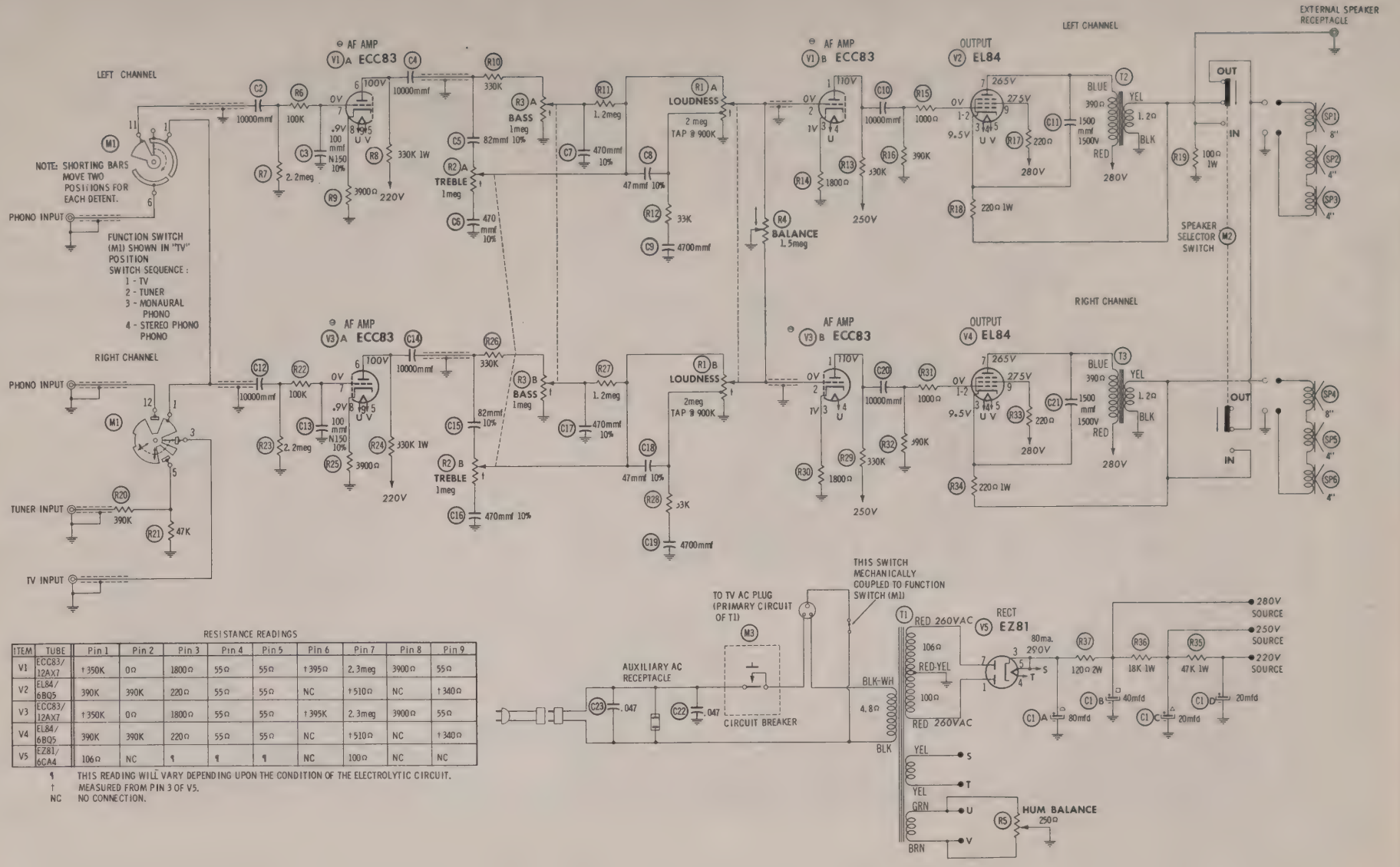
ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	1000Ω	
R206	4700Ω	

ITEM No.	RATING	REMARKS
R207	4700Ω	



TUNER 710022 TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83/ 12AX7	†350K	0Ω	1800Ω	55Ω	55Ω	†395Ω	2.3meg	3900Ω	55Ω
V2	EL84/ 6BQ5	390K	390K	220Ω	55Ω	55Ω	NC	†510Ω	NC	†340Ω
V3	ECC83/ 12AX7	†350K	0Ω	1800Ω	55Ω	55Ω	†395K	2.3meg	3900Ω	55Ω
V4	EL84/ 6BQ5	390K	390K	220Ω	55Ω	55Ω	NC	†510Ω	NC	†340Ω
V5	EZ81/ 6CA4	106Ω	NC	¶	¶	¶	NC	100Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CIRCUIT.
† MEASURED FROM PIN 3 OF V5.
NC NO CONNECTION.

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AMP CHASSIS 1139

HOFFMAN MODELS M3703, SP3703, W3703 (Ch. 426, 1139)

AMP
PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp.	ECC83/12AX7 (7025)*	V4	Right Channel Output	EL84/6BQ5
V2	Left Channel Output	EL84/6BQ5	V5	Rect.	EZ81/6CA4
V3	Right Channel AF Amp.	ECC83/12AX7 (7025)*			

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▬80	400	857105	AFH4-93-50	C0370	FP420.46	TMT-43	TVLS-4657.8*	
B	■40	350			BR2035		TD-20-350		
C	▲20	300							
D	20	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C3	100 N150 10%	#851605				*		10TCP-T10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	82 10%		DI-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C6	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C7	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C8	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C9	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C13	100 N150 10%	#851605				*		10TCP-T10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	82 10%		DI-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C16	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C17	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C18	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C19	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C22	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C23	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer. # Hoffman Part No.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg 900K Tap	½	802042					Loudness, Left Channel
B	2meg 900K Tap	½						Loudness, Right Channel
R2A	1meg	½	802043	B-69	AD47-1meg-S		FA16L	Treble, Left Channel
B	1meg			SR-69	Not Req.		RU16L	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg	½	802043	B-69	AD47-1meg-S		FA16L	Bass, Left Channel
B	1meg	½		SR-69	Not Req.		RU16L	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	1.5meg	½	802072	B-742	A47-1.5meg-S	Q11-138	U155	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	250Ω	½	800014	AB-2	A43-200	B11-201	R250L	Hum Balance
B	Shaft			AK-1	FKS-1/4	SK-2	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	100K	
R7	2.2meg	
R8	330K 1W	
R9	3900Ω	
R10	330K	
R11	1.2meg	
R12	33K	
R13	330K	
R14	1800Ω	
R15	1000Ω	
R16	390K	

ITEM No.	RATING	REMARKS
R17	220Ω	
R18	220Ω 1W	
R19	100Ω 1W	
R20	390K	
R21	47K	
R22	100K	
R23	2.2meg	
R24	330K 1W	
R25	3900Ω	
R26	330K	
R27	1.2meg	

ITEM No.	RATING	REMARKS
R28	33K	
R29	330K	
R30	1800Ω	
R31	1000Ω	
R32	390K	
R33	220Ω	
R34	220Ω 1W	
R35	47K 1W	
R36	18K 1W	
R37	120Ω 2W	

CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp. - Video Det.	6AM8A
V4	Video Output-AGC Keying	6AW8A
V5	Sound IF Amp.	6AU8
V6	Audio Detector	6DT6
V7	Sync Sep. -Sync Phase Inv.	12AUTA
V8	Vert. Mult.	6CG7
V9	Vert. Output	6DT5
V10	Horiz. AFC	6AL5
V11	Horiz. Mult.	6CG7
V12	Horiz. Output	6DQ6A
V13	Damper	5DA4 (6DA4/6DE4) *
V14	HV Rect.	1B3GT (1B3GT/1G3GT)*
V15	LV Rect.	5U4GB

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V16	23CP4		23CP4 ①		23CP4 ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	350	857104	AFH4-05-60	D0044	FP425.6	TMQ-194	TVLS-4635.10*	
B	●40	350							
C	▲10	350							
D	10	350							
C2A	100	350	856704	AFH2-100-50	B0726	FP256	TMD-91	TVL-2813	
B	20	350							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C5	.22 200V		P388N-22		CUB2P22	2DP-4-224	GEM-2047	2TM-P22
C6	.47 200V		P388N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C7	470 10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C8	470 10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C9	56 N750 5%			CTN-560	C10G56U	CCTN-560	CNT-56	10TCU-G56
C10	33 NPO		NPO-DI 33	DT2-33	C10Q33C	CCTO-330	CNO-33	10TCC-Q33
C11	470 10%		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C14	470 10%		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C15	470 10%		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C17	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C18	470 10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C19	470 10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C20	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C21	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C22	10 10%		NPO-SI 10	DD-100	L0Q8	CCD-100	GP410	10TS-Q10
C23	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C24	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C25	220 N750 10%		N750-DI 220	DTN-220	C10T22U	CCTN-221	CNT-322	10TCU-T22
C26	220 N750 10%		N750-DI 220	DTN-220	C10T22U	CCTN-221	CNT-322	10TCU-T22
C27	4700		BPD-0047	DD-472	BYA10D47M	CCTN-472	GP247	5HK-D47
C28	47 10%		DI-47	DD-470	L0Q47	CCD-470	GP447	10TS-Q47
C29	.1 400V		P488N-1		DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C30	.047 200V		P388N-047		DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C31	56 3000V 10%	#850112							
C32	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522		10TCC-V22
C33	47 10%		DI-47	DD-470	L0Q47	CCD-470	GP447		10TS-Q47
C34	47 10%		DI-47	DD-470	L0Q47	CCD-470	GP447		10TS-Q47
C35	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247		5HK-D47
C36	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247		5HK-D47
C37	1000 10%		DI-1000	DD-102	PM5D1	CCD-102	GP210		5HK-D10
C38	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210		5HK-D10
C39	18 NPO 10%		NPO-DI 20	DTZ-20	C10Q18C	CCTO-180	CNO-418		10TCC-Q18
C40	.047 200V		P388N-047		DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C41	470 10%		DI-470		DD-471	SR5T47	CCD-471	GP347	10TS-T47
C42	.0022 400V		P488N-0047		D5-222	CUB5D22	6DP-1-222	GEM-6222	5TM-D47
C43	220 N750 10%		N750-DI 220		DTN-220	C10T22U	CCTN-221	CNT-322	10TCU-T22
C44	100 10%		DI-100		DD-101	L0T1	CCD-101	GP310	10TS-T10
C45	.001 400V 10%		V84C5DI-10%		DD-102	PM6D1	6DP-1-102	GP210	6TM-D1
C46	.001 400V 10%		V84C5DI-10%		DD-102	PM6D1	6DP-1-102	GP210	6TM-D1
C47	.0047 200V 10%		V84C2D47-10%			PM6D47	6DP-1-472	JL-247	6TM-D47
C48	.047 200V		P388N-047		DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C49	.0047 600V 10%		V84C6D47-10%			PM6D47	6DP-1-472	JL-247	6TM-D47
C50	220 N750 10%		N750-DI 220	DTN-220		C10T22U	CCTN-221	CNT-322	10TCU-T22
C51	.1 600V		P688N-1			DF-104	6DP-4-104	GEM-601	6TM-P1
C52	.022 600V		P688N-022		DD-303	CUB6S22	6DP-3-223	GEM-6122	6TM-S22
C53	20000		BPD-02		DD-203	BYB562	CCD-203	GP120	5HK-B20
C54	.022 600V		P688N-022		DD-303	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C55	.01 1600V		P1864CM-01		DD16-103	CUB16S	16DP-3-103	GEM-161	MB-S1
C56	.22 200V		P388N-22			CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C57	4700		BPD-0047		DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C58	.047 200V		P388N-047		DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C59	3900 10%		1464-0039			1RB3D9	CM-20B-392K	MC2492.5	MS-239
C60	100 10%		1469-0001		TCZ-100	22R5T1	CM-20B-101K		MS-310
C61	470 10%		1469-00047		DD-471	5R5T47	CM-20B-471K	MCJ 244	MS-347
C62	330 10%		1469-00033		DD-331	5R5T33	CM-20B-331K	MCJ341	MS-330
C63	.1 200V		P288N-1		DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C64	.001 400V		P488N-001		D5-102	CUB5D1	6DP-1-102	GEM-421	6TM-D1
C65	.1 400V		P488N-1		DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C66	.1 600V		P688N-1	DF-104	CUB4 P1	6DP-3-104	GEM-601	6TM-P1
C67	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C68	.068 600V		[illegible]	DD16-702	CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C69	170 3000V 10%	#850109						
C70	170 3000V 10%	#850109						
C71	100 3000V		HVD-30-100	DD30-101	HVB30T1	3CCD-101	3DY-310	30GA-T10

Hoffman Part No.

CONTROLS

ITEM No.	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300Ω	½	800074					Contrast
B	Switch							Push-Pull Off-On
R2A	1.5meg	½	800072	B-742	A47-1.5meg-S	Q11-138	U155	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	150K	½	800073	B-43	A47-150K-S	Q11-328	RU154L *	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	SL-3500	
R4A	100K	½	800038	AB-40	B47-100K-S	B11-128	PTA15L	AGC
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R5A	10K	½	800080	AB-14	B47-10K-S	B11-116	SU-20	Horiz. Drive
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6A	4meg	½	800081	AB-86	B47-5meg-S	B11-240	PTA56L	Focus
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R7A	1meg	½	800039	AB-69	B47-1meg-S	B11-137	PTA254L	Vert. Lin.
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R8A	1meg	½	800039	AB-69	B47-1meg-S	B11-137	PTA254L	Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.	

* Use bushing SL-38

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	27K	
R10	2.7meg	
R11	470K	
R12	470K	
R13	15K	
R14	470Ω	
R15	470Ω	
R16	47K	
R17	4700Ω 1W	
R18	47Ω	
R19	33K	
R20	470Ω	
R21	4700Ω 1W	
R22	47Ω	
R23	15K	
R24	22K	
R25	150Ω	
R26	1000Ω	
R27	12K	
R28	4700Ω	
R29	22K 2W	
R30	39K	
R31	270K	
R32	22K	
R33	47K	
R34	5600Ω 1W	
R35	39K	
R36	12K	
R37	820K	
R38	820Ω	
R39	100K	
R40	560K	
R41	820K	
R42	27K	
R43	820Ω 1W	
R44	4700Ω 4W	
R45	330K	
R46	2.2meg	
R47	27K	
R48	120K	
R49	2200Ω 1W	
R50	2200Ω 1W	
R51	2200Ω 1W	
R52	1800Ω 1W	
R53	470Ω	
R54	22K	
R55	68K 1W	
R56	1000Ω 5%	
R57	1.2meg	
R58	680K 1W	
R59	22K	
R60	27K 1W	
R61	47K 1W	
R62	2200Ω	
R63	4700Ω	
R64	220Ω	
R65	220Ω	
R66	3Ω (Cold)	
R67	100K	
R68	100K	
R69	470K	
R70	4.7meg	
R71	6800Ω	
R72	1800Ω 5%	
R73	100K	
R74	100K	
R75	22K	Note 1
R76	10K	(5600Ω) *
R77	100Ω	
R78	470K	
R79	100Ω	
R80	10K 2W	
R81	22K	
R82	150 2W	
R83	470Ω	
R84	1000Ω 1W	
R85	2000Ω 10W	#825439
R86	100Ω 10W	#825377
R87	330K	
R88	2.2Ω 1W	
R89	1.5meg	
R90	1meg	

\# Hoffman Part No. * Alternate value. Note 1 Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	NOTES
L1A	1st Video IF	762013						
B	47.25MC Trap							
L2	2nd Video IF	762017	17-4523	17-4523	TV-130	6219	VF-3	
L3A	3rd Video IF	762025	17-4536	17-4536		6222		
B	47.25MC Trap							
L4	4th Video IF	762019	17-5004	17-5004	TV-126	6224		
L5	RF Choke	750014	19-1004	19-1004	BC-566	4610		
L6	Series Peaking Coil	771008	19-3100	19-3100	TV-181	6113	VP-3	6.8uh ① 100uh
L7	Shunt Peaking Coil	771009			TV-207	6158		820uh
L8	4.5MC Trap	762005	20-1004	20-1004	TV-151	1469 *	SF-3	
L9	Series Peaking Coil	771013	19-4301	19-4301	TV-197	6154		220uh
L10	1st Sound IF	762005	20-1004	20-1004	TV-151	1469 *	SF-3	
L11	2nd Sound IF	762003	17-3495	17-3495	TV-113	6203	SF-2	
L12	Quadrature Coil	774001	20-1007	20-1007	TV-121	1480		

① IRC Part #CLA. * Disregard tap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Rom PART No.	Thordarson PART No.	NOTES
L13	521		766017	HS-5	TV-133	6210	H-102	HS-5	Horiz. Stabilizing

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ① 1.9A	580VCT ② 290A	5V ② 3A	716020-1 ①						R-80BC ②
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② .6A	6.3V ② 8.5A								

① Alternate Part #716020. ② Phase and parallel 6A and 5A filament windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	728010							
T3	Yoke-Horiz. (18MH) (110°)-Vert. (13. 22MH)	790009	Y-48 ①②		Y-110 ①②		DY-27A ①②	Y-48 ①②	Y-80 & NW-12 ②
T4	Horiz. Output	782009	FLY-150 * ①	HVO-116 * ③	X166 *		HO-289 *	FLY-150 * ①	D-160 * ①

① Use original rear cover and centering device. ② Use original yoke plug and connect same as original. ③ Connect yoke terminal #2 to yoke plug pin #3, yoke #1 and #5 to plug #6, yoke #10 to plug #8.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Rom Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8	5	5	5		5	5	8
7	4	4	4		4	4	4
6	3	3	3		3	3	3
1	1	1	1		1	1	1

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 8200Ω, 8200Ω, 22K	986001	Aerovox	PA-110
				Centralab	PC-100
				Cornell-Dubilier	115TM1
				Mallory	MS-100
				Sprague	V1/V3

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	Tuner	710022	VHF

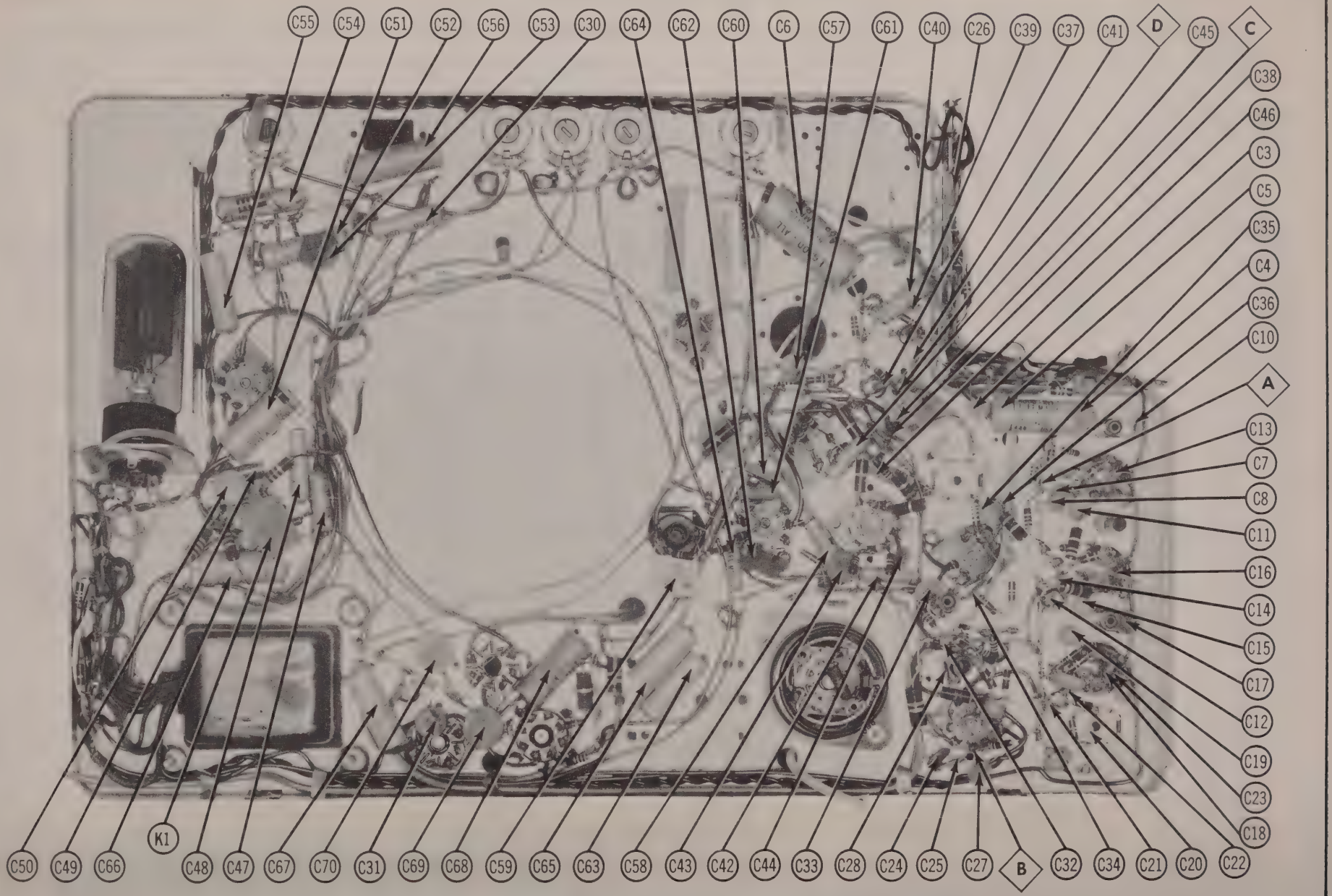
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	[illegible]	Picture Tube, Model M3703
Mask	527005	Picture Tube, Model SP3703
Mask	527002	Picture Tube, Model W3703
Knob	480070	Channel Selector
Knob	496014	Fine Tuning
Knob	508019	Off-On Volume, Brightness, Contrast, Vert. Hold, Tone, Bass, Treble, Stereo Balance
Cabinet	354068	Model W3703
Cabinet	354069	Model M3703
Cabinet	354070	Model SP3703

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8674
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8276
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

AMP
PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI	SEC. 1	SEC. 2	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	117V @ .68A	520VCT @ .080A	6.3V @ .9A	716026						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.3A									

TRANSFORMER (AUDIO OUTPUT)

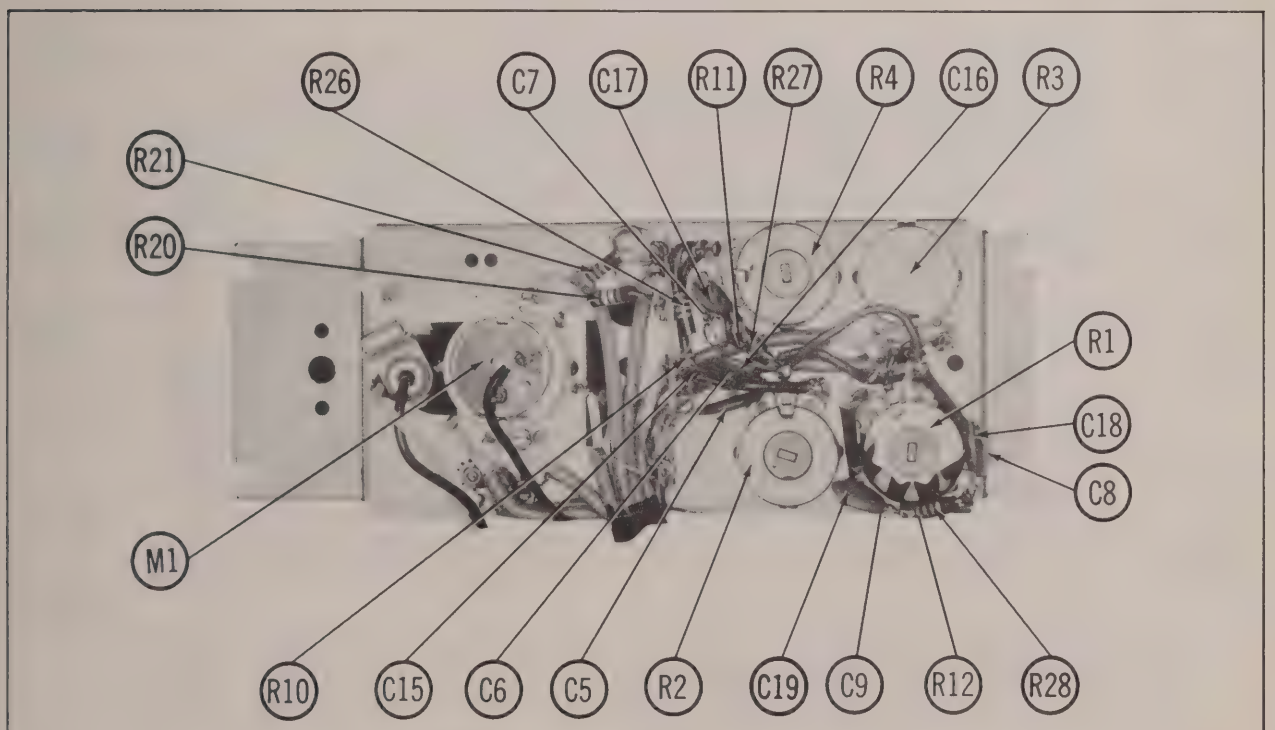
ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	11K	22Ω	724033	24S06	A-2901	AU-600	A-3823	24S06	S-53X	
T3	11K	22Ω	724033	24S06	A-2901	AU-600	A-3823	24S06	S-53X	

SPEAKER

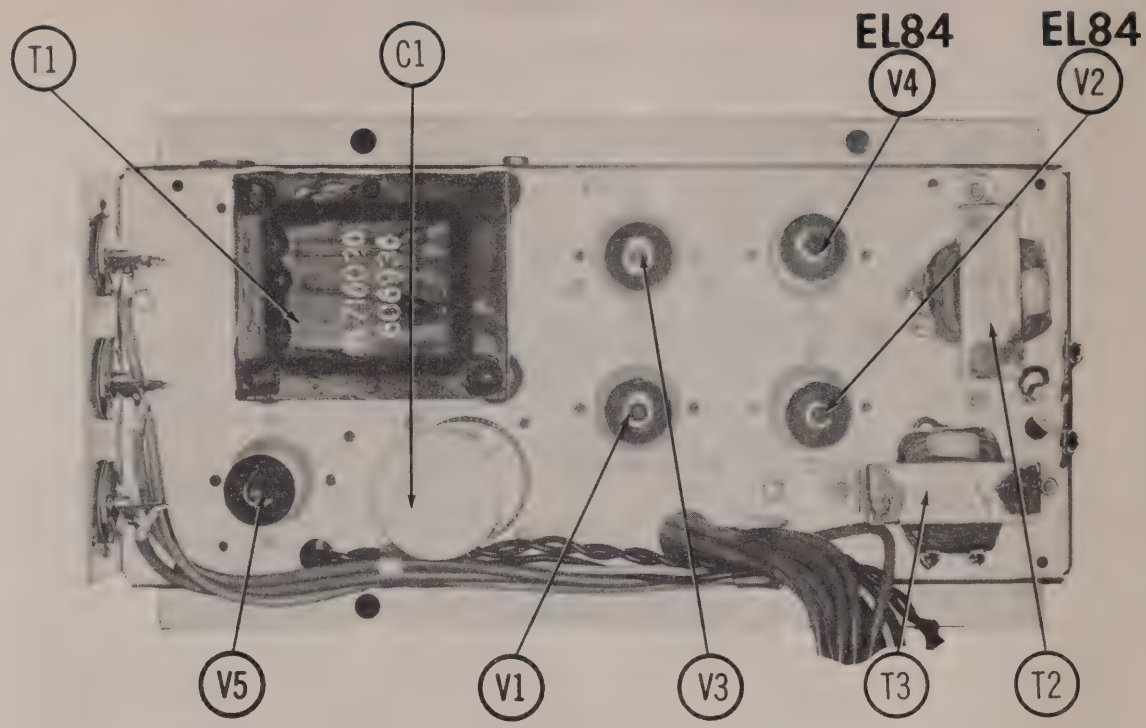
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HOFFMAN PART No.	QUAM PART No.	
SP1	8"	PM	14-16Ω	708605 ①	8A1Z15.8	① Right Channel
SP2	4"	PM	3-4Ω	708017 ①	4A1	② Left Channel
SP3	4"	PM	3-4Ω	708017 ①	4A1	
SP4	8"	PM	14-16Ω	708605 ②	8A1Z15.8	
SP5	4"	PM	3-4Ω	708017 ②	4A1	
SP6	4"	PM	3-4Ω	708017 ②	4A1	

MISCELLANEOUS

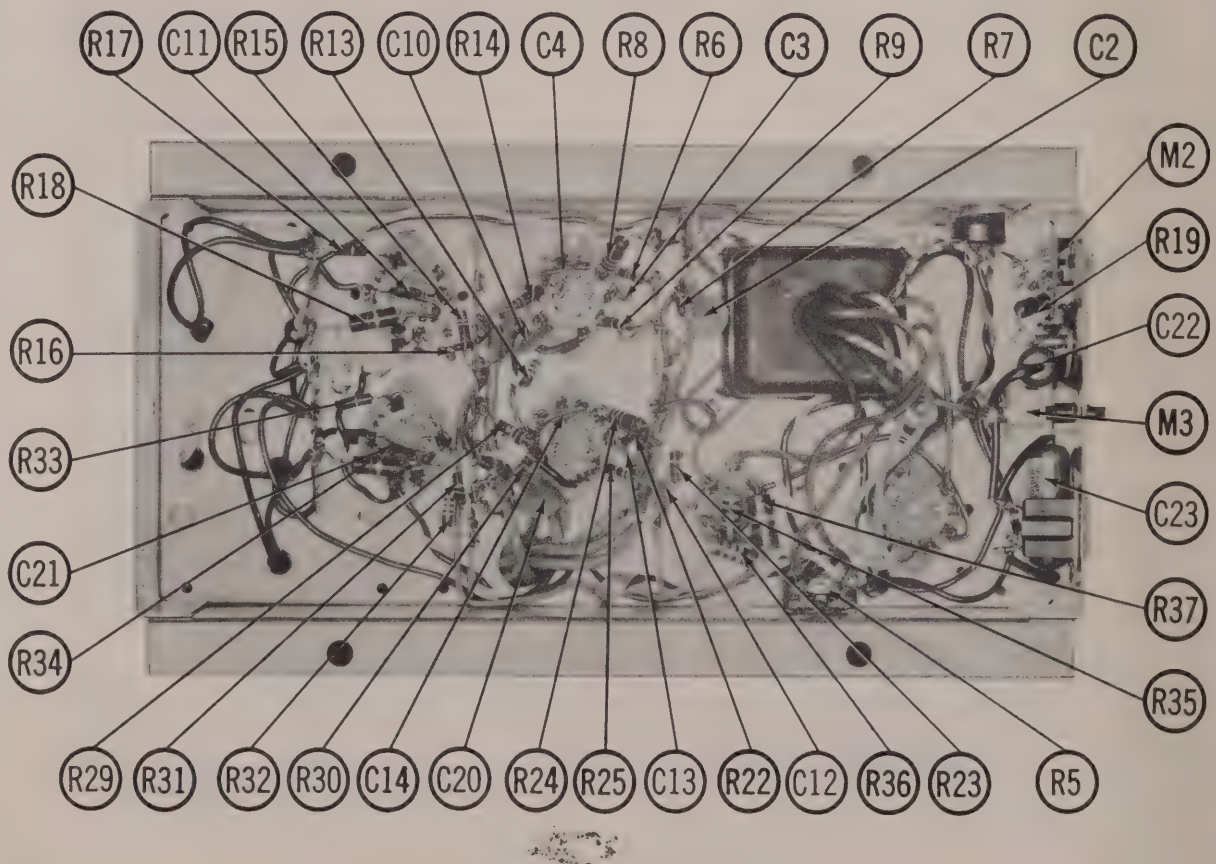
ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	Switch	902031	Function
M2	Switch	904005	Speaker Switch (DPDT Slide Type)
M3	Circuit Breaker	935001	



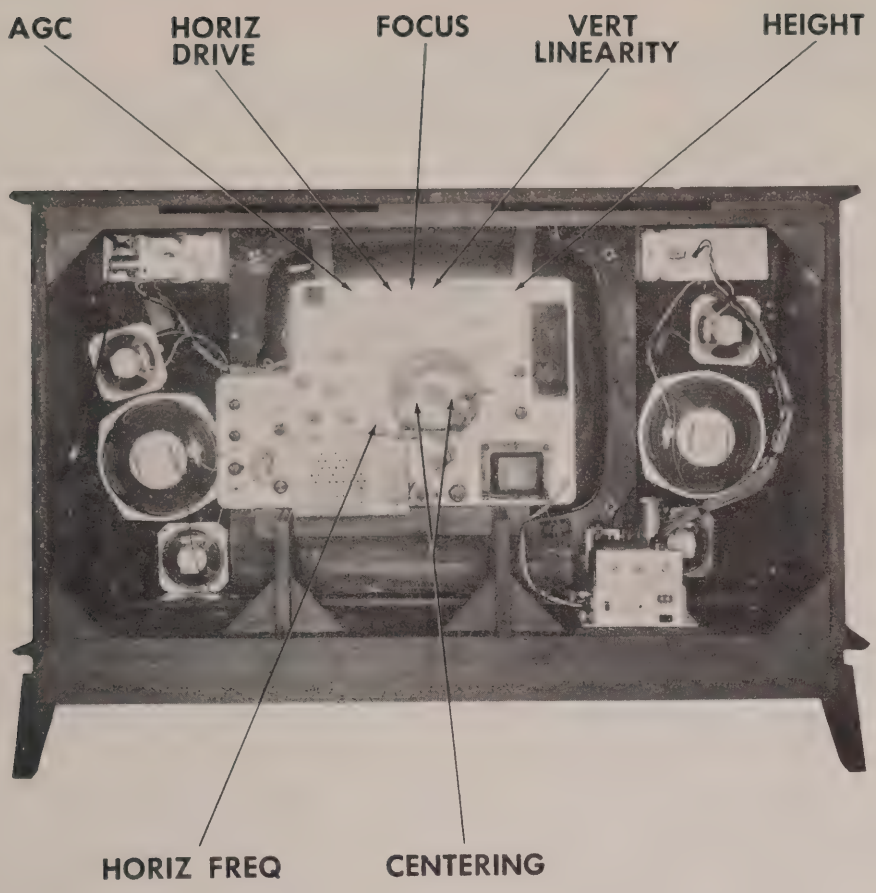
CONTROL PANEL



AMP CHASSIS - TOP VIEW



AMP CHASSIS - BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Frequency (Hold) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Frequency (Hold) slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive control until white lines disappear.

If the horizontal drive was adjusted, recheck adjustment of Horizontal Frequency (Hold) by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

1. Remove 4 push-on type knobs from right front of cabinet. Remove tuner escutcheon by pulling straight out. Remove Channel Indicator knob and Fine Tuning knob. Remove 1 metal screw holding control escutcheon. Remove escutcheon. Remove 4 wood screws holding control panel.
2. Remove 11 wood screws and 1 metal screw holding rear cover. Remove antenna lead. Remove rear cover.
3. Remove HV lead, yoke plug, picture tube socket and 2 amplifier chassis plugs.
4. Remove 2 chassis bolts from bottom and 2 wood screws holding chassis mounting brackets at the top of cabinet.
5. Remove chassis.

AMPLIFIER CHASSIS REMOVAL

1. Remove 5 push-on type knobs from left front of cabinet Remove selector escutcheon by pulling straight out. Remove selector knob. Remove 1 metal screw holding control escutcheon. Remove escutcheon. Remove 4 wood screws holding control bracket.
2. Remove the rear cover. (See Step 2 of TV Chassis Removal.)
3. Remove speaker leads and 2 amplifier chassis plugs.
4. Remove 4 chassis bolts.
5. Remove amplifier chassis.

PICTURE TUBE REMOVAL

1. Remove the rear cover.
2. Remove 4 spring clips holding front mask. Remove mask.
3. Remove HV lead, yoke plug and picture tube socket.
4. Remove 4 bolts holding picture tube mounting brackets.
5. Remove picture tube.

TUNER ALIGNMENT INSTRUCTIONS

710022

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools:
A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A216 thru A227..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A204 thru A215 ..... None Required

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A205	
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

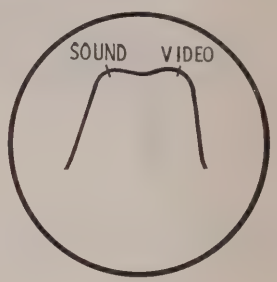


FIG.201

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A217	
		201MC	199.25MC 203.75MC	11		A218	
		195MC	193.25MC 197.75MC	10		A219	
		189MC	187.25MC 191.75MC	9		A220	
		183MC	181.25MC 185.75MC	8		A221	
		177MC	175.25MC 179.75MC	7		A222	
		85MC	83.25MC 87.75MC	6		A223	
		79MC	77.25MC 81.75MC	5		A224	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

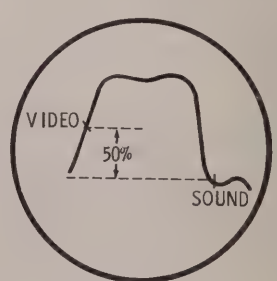
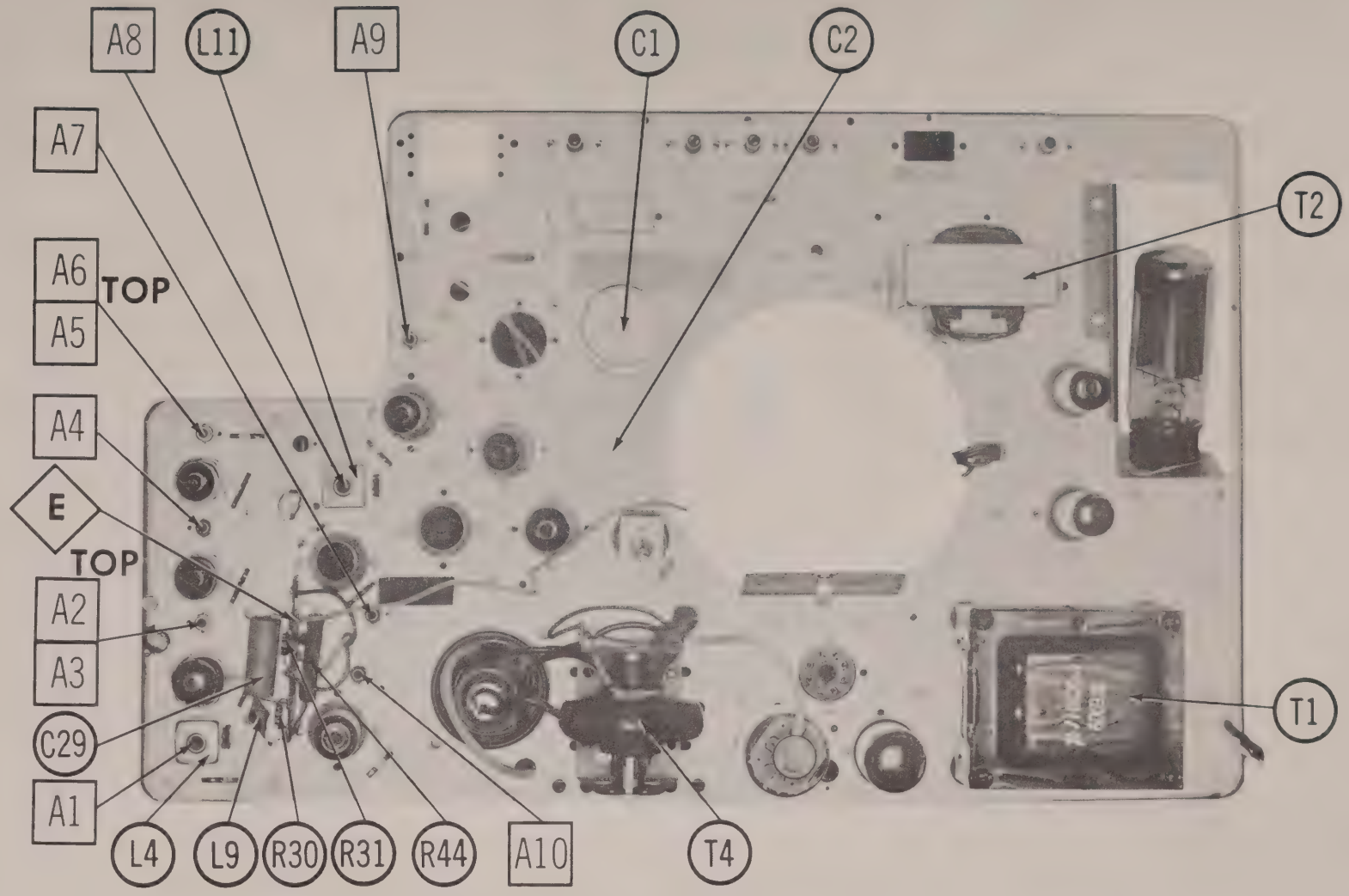


FIG.202



CHASSIS - TOP VIEW

HOFFMAN MODELS M3703, SP3703,
W3703 (Ch. 426, 1139)

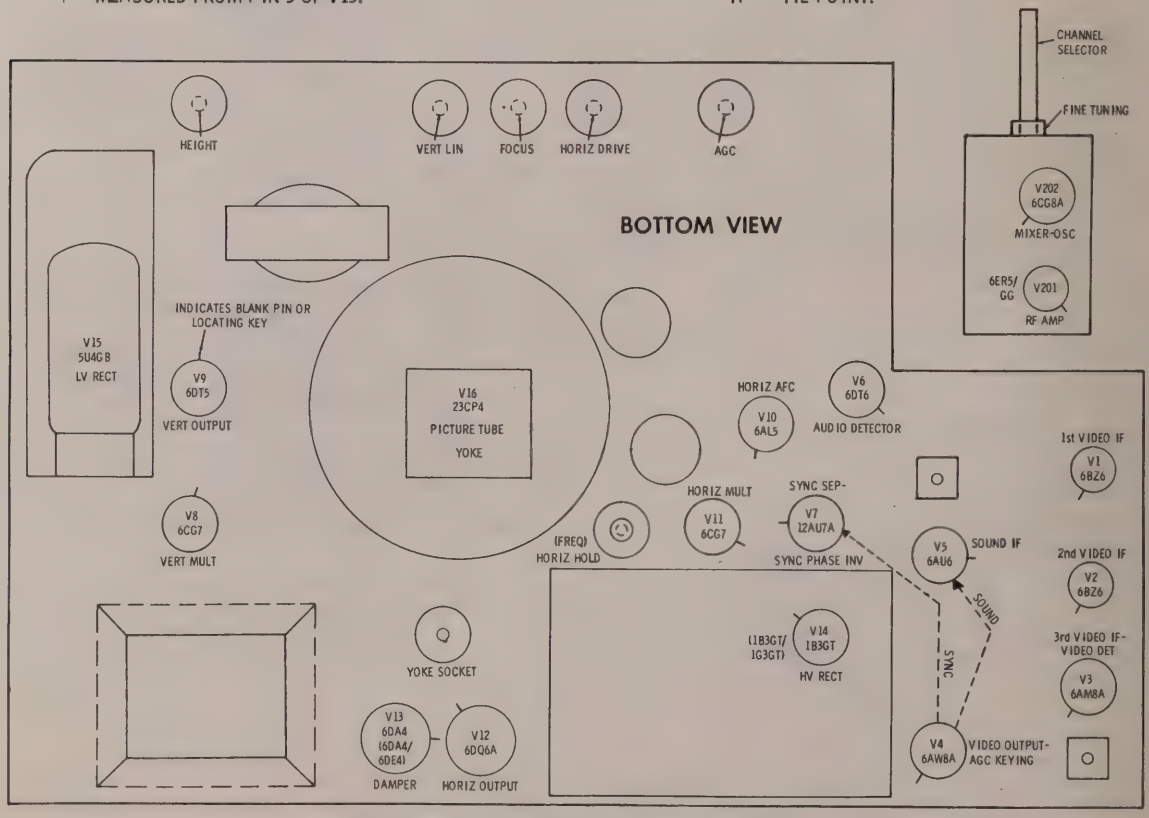
FOLDER 2

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	• 90K	47Ω	.1Ω	0Ω	†6800Ω	†6800Ω	0Ω		
V2	6BZ6	• 90K	47Ω	.1Ω	0Ω	†6800Ω	†6800Ω	0Ω		
V3	6AM8A	150Ω	.1Ω	†24K	.1Ω	0Ω	†1100Ω	.2Ω	4700Ω	0Ω
V4	6AW8A	†100Ω	†920Ω	•560K	700K	700K	• 60Ω	4700Ω	†22K	†5600Ω
V5	6AU6	47K	0Ω	.1Ω	0Ω	†7700Ω	†30K	0Ω		
V6	6DT6	5Ω	820Ω	.1Ω	0Ω	‡840K	†7700Ω	560K		
V7	12AU7A	†4500Ω	†120K	4500Ω	.1Ω	.1Ω	†120K	2.5meg	0Ω	0Ω
V8	6CG7	†68K	60K	1000Ω	0Ω	.1Ω	‡700K	• 1.8meg	1000Ω	0Ω
V9	6DT5	†3300Ω	NC	• 1.1meg	0Ω	.1Ω	• 1.1meg	0Ω	NC	†400Ω
V10	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8meg	0Ω	4.8meg		
V11	6CG7	†7900Ω	5.2meg	1500Ω	0Ω	.1Ω	†120K	100K	1500Ω	0Ω
V12	6DQ6A	NC	0Ω	NC	†10K	• 550K	TP	.1Ω	0Ω	TOP CAP ‡15Ω
V13	6DA4	NC	NC	¶4meg	NC	†100Ω	NC	.1Ω	0Ω	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡380Ω
V15	5U4GB	NC	¶	NC	20Ω	NC	19Ω	NC	¶	
V16	23CP4	0Ω	22K	‡22K	•‡800K	NC	22K	• 300K	.1Ω	
V201	6ER5/GG	0Ω	• 95K	0Ω	.1Ω	†3600Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†9100Ω	0Ω	0Ω	.1Ω	†3600Ω	†4400Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15
‡ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT® Folder

EIA

PRODUCTION CHANGE BULLETIN 234

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 461

RCA Victor Models 210K295, U, 210K296, 210K297, U, 210K299, 210K335, U, 210K336, U, 210K337, U, 210K356, 210K357, 210K390, 210K394, 210K415, U, X, XU, 210K416, X, 210K417, X, 210KR435, 210KR436, 210KR455, 210KR456, 210KR457, 210T152, U, 210T155, U, 210T156, U, 210T157, U, 210TR212 (Ch. CRK3B, CR44A, CTP8A, CTP9A, KCS128A, AA, AB, B, C, E, F, H, HX, J, JX, M, U, X, XU) were in PHOTOFACT Folder 1 - Set 461.

Late in production new models and late production changes were added.

The following is a list of all new models.

MODEL	CHASSIS	MODEL	CHASSIS
210K295SU	KCS128ZAA	*210KR456SU	KCS128ZM
210K297SU	KCS128ZAA	*210KR457SU	KCS128ZM
210K315, U	KCS128AA, AB	210T140	KCS128YC
210K316	KCS128AA	210T152SU	KCS128ZA
210K317, U	KCS128AA, AB	210T155SU	KCS128ZA
210K319	KCS128AA	210T156SU	KCS128ZA
210K365, SU	KCS128YP, ZP	210T157SU	KCS128ZA
210K366	KCS128YP	†210TR212, SU	KCS128U, ZU
210K435SU	KCS128ZU	*210TR222	KCS128M
†210KR436SU	KCS128ZU	*210TR225, SU	KCS128M, ZM
*210KR445SU	KCS128ZM	*210TR227	KCS128M
*210KR446SU	KCS128ZM	240K485	KCS128AA
*210KR455SU	KCS128ZM	240K486	KCS128AA

* These models use CRK3B and CTP9A Remote Control Chassis.

† These models use CRK4A and CTP8A Remote Control Chassis.

Chassis KCS128ZA, ZM, ZP, ZU, ZAA

NEW UHF-VHF TUNER ADDED

Models using Ch. KCS128ZA, ZM, ZP, ZU, ZAA use UHF-VHF tuner KRK87A, B, C, J. A schematic showing the new tuner is given on the reverse side.

Models 240K485 240K486

NEW PICTURE TUBE

Models 240K485 and 240K486 use a 24ATP4 picture tube.

COMPONENT CHANGES

R12 is increased from 4700Ω to 6800Ω.

R14 is decreased from 68Ω to 56Ω.

R1A, B, C (On-Off-Volume) is changed to Part #107616 in Ch. KCS128M, ZM.

R69 is changed in wattage from 2W to 3W. Early production uses a 10K 3W resistor and late production uses an 8200Ω 3W resistor.

RCA VICTOR CHASSIS KCS 128AA, AB, M, U, YC, YP, ZA, ZAA, ZM, ZP, ZU

PRODUCTION CHANGE BULLETIN 234

PRODUCTION CHANGE BULLETIN 234

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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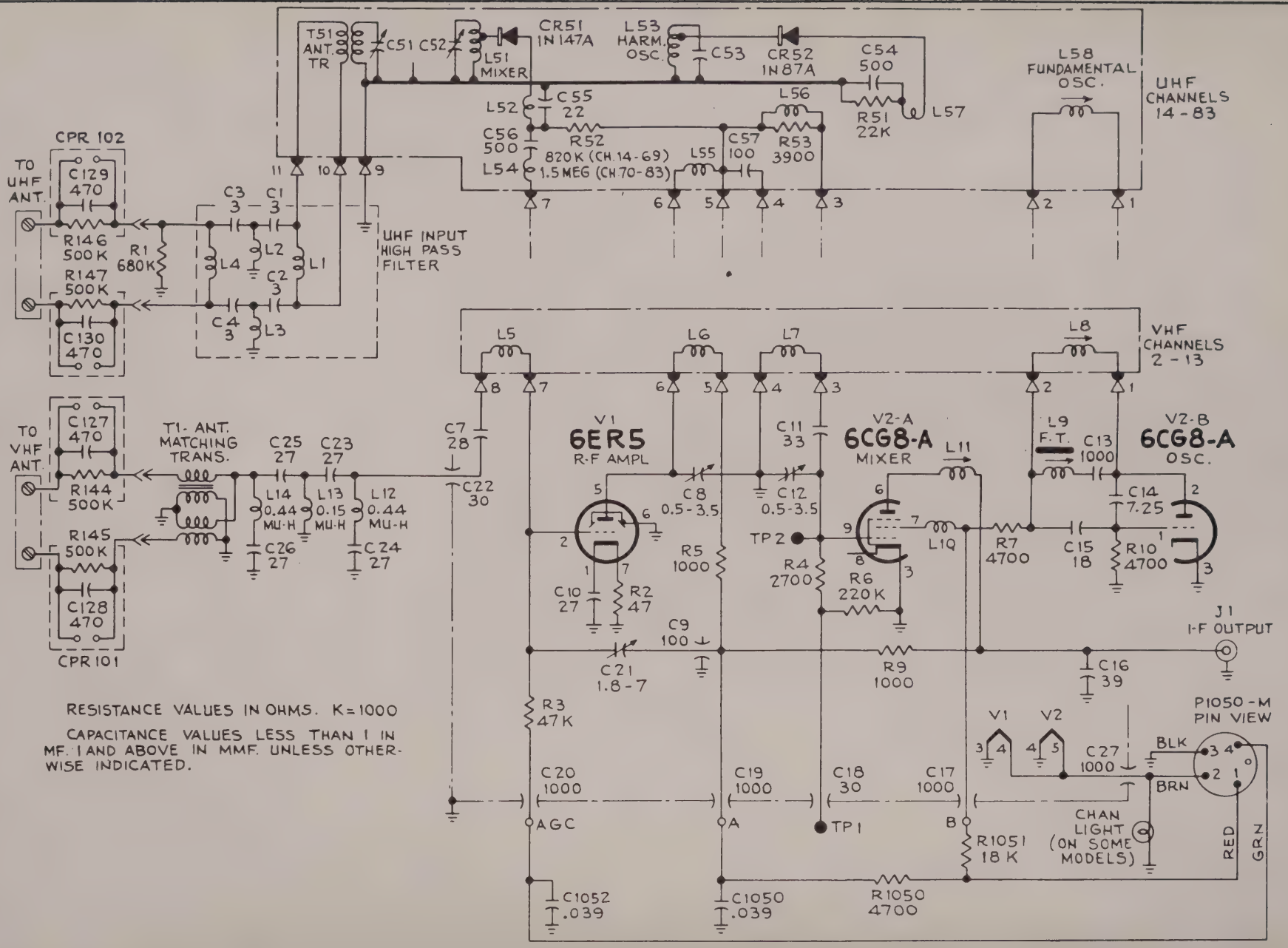
RCA VICTOR UHF-VHF TUNER # KRK 87A, B, C, J



RESISTANCE VALUES IN OHMS. K=1000

CAPACITANCE VALUES LESS THAN 1 IN MF. 1 AND ABOVE IN MMF. UNLESS OTHERWISE INDICATED.

Schematic Diagram Courtesy of Radio Corporation of America

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 442

MUNTZ MODELS S17PD, S17PD82, S17PS, S17PS82 (CH. T37M04U, T37M05, T37004U, T37005)

Muntz Models 17PD, 17PS (Ch. J) were covered in PHOTOFACT Folder 2 - Set 442.

Models S17PD, S17PD82, S17PS, S17PS82 (Ch. T37M04U, T37M05, T37004U, T37005) are added along with late production changes.

Late in production some of the models that were added use a 3DT6 (Sound Detector) instead of the crystal detector used in the early models. A partial schematic showing the 3DT6 is given in this bulletin on the reverse side.

COMPONENT CHANGES

R72 is decreased from 36Ω 15 watt to 30Ω 15 watt.

COMPONENT ADDED

The 3DT6 is inserted in the filament string between V6 (6CG7) and V4 (6AW8A).

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 444

MUNTZ MODELS 21CS, 21CS82, 21TS, 21TS82, 24TS, 24TS82 (CH. T37Q04U, T37Q05, T37R04U, T37R05, T37S04U, T37S05)

Muntz Models 21LTS, 24LTS (Ch. J) were covered in PHOTOFACT Folder 2 - Set 444.

Models 21CS, 21CS82, 21TS, 21TS82, 24TS, 24TS82 (Ch. T37Q04U, T37Q05, T37R04U, T37R05, T37S04U, T37S05) are added along with late production changes.

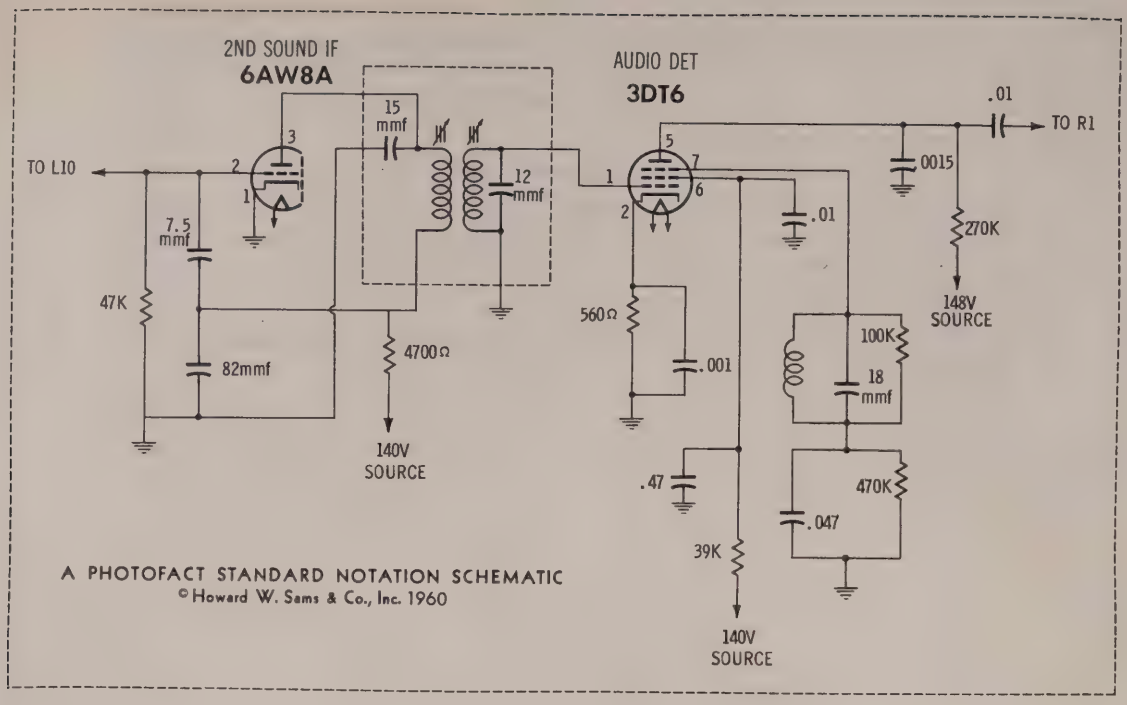
COMPONENT CHANGE

M3 and M4 are replaced with a 3AL5 tube. Pin 7 of the 3AL5 connects to the top winding of the secondary of L11 (Sound Discriminator). Pin 2 of the 3AL5 connects to the bottom winding of the secondary of L11 (Sound Discriminator). Pin 1 of the 3AL5 connects to the junction of C26, C27 and R35. Pin 5 of the 3AL5 connects to ground.

R73 is decreased from 36Ω 15 watt to 30Ω 15 watt.

COMPONENT ADDED

The 3AL5 is added to the filament circuit between V6 (6CG7) and V4 (6AW8A).



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT® Folder with CIRCUITRACE*

ADMIRAL MODELS 691, 692, Y793, Y797, Y798, (Ch. 5E5, A, B)

ADMIRAL MODELS 691, 692, Y793, Y797, Y798, (Ch. 5E5, A, B)

MODEL 692

TRADE NAME	Admiral Models 691 (Ch. 5E5), 692 (Ch. 5E5A), Y793, Y797, Y798 (Ch. 5E5B)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver (Models Y793, Y797, Y798 are Clock Versions)
POWER SUPPLY	6 Volts DC
RATING	7MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535-1620KC
	15MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A4, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		1620KC	"	"	A4	"
3.	"	535KC	Tuning gang fully closed	"	A5	"
4.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY

1. Insert a coin in slot of cabinet bottom and twist. Remove rear cover.
2. Remove 2 knobs by pulling.
3. Remove 4 chassis mounting screws (from corners of printed board.)
4. Remove chassis from cabinet.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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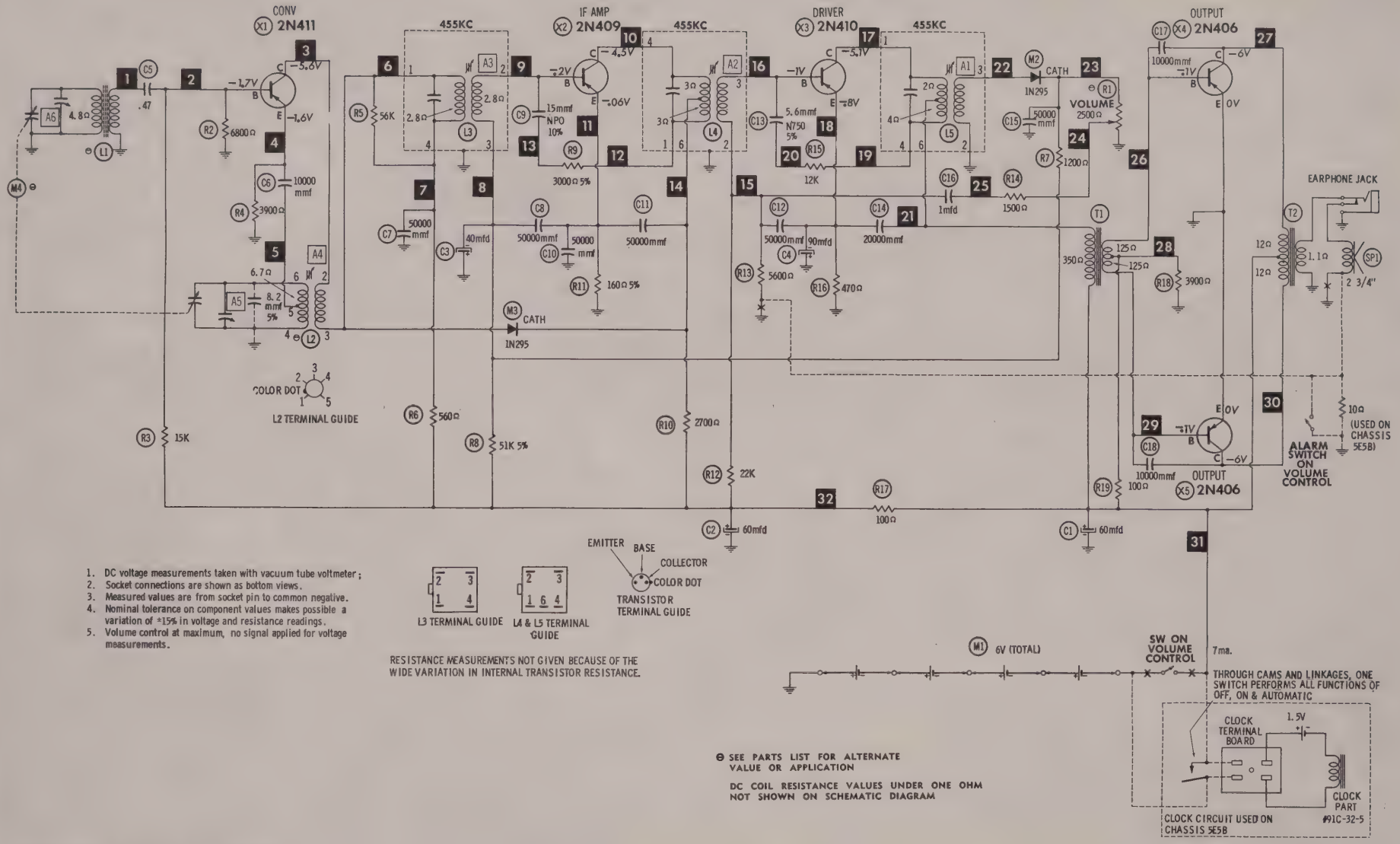
SET 478 FOLDER 4



1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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ADMIRAL MODELS 691, 692, Y793, Y797, Y798, (Ch. 5E5, A, B)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter		2N411	2N486	2N411	PNP
X2	2N409	1st IF Amplifier		2N409	2N483	2N409	PNP
X3	2N410	Driver		2N410	2N483	2N410	PNP
X4	2N406	Output		2N406	2N633	2N406	PNP } Matched Pair
X5	2N406	Output		2N406	2N633	2N406	PNP } Matched Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	60	6	67B32-8	BCD6050	ECPA-115	PET1260	ML75-6	VL-1097	
C2	60	6	67B32-8	BCD6050	ECPA-115	PET1260	ML75-6	VL-1097	
C3	40	3	67B32-9	BCD3035	ECPA-14	PET140	ML40-6	VL-1045	
C4	90	3	67B32-10	BCD3100	ECPA-17		ML100-3	VL-1051	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.47	#65B45-16		TCZ-R5				
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	TA-110	5HK-S10
C7	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C8	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C9	15 NPO 5%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C10	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C11	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C12	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C13	5.6 N750 5%	#65D10-176						
C14	20000		BPD-02	DD-203	BYB6S2		TA-120	5HK-S20
C15	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C16	1.0	#65B45-15		UK-105				HY-135
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	TA-110	5HK-S10
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	TA-110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/4	75B51-1					Volume & Switch, Note 1

Note 1. Ch. 5E5B uses 2500Ω Volume with alarm switch (Part #75B51-2).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	15K	
R4	3900Ω	
R5	56K	
R6	560Ω	
R7	1200Ω	

ITEM No.	RATING	REMARKS
R8	51K 5%	
R9	3000Ω 5%	
R10	2700Ω	
R11	160Ω 5%	
R12	22K	
R13	5600Ω	

ITEM No.	RATING	REMARKS
R14	1500Ω	
R15	12K	
R16	470Ω	
R17	100Ω	
R18	3900Ω	
R19	100Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	69B218-8 ①						
L2	Osc. Coil	69B232-4 * ②						
L3	1st IF Trans.	72C182-8 *						
L4	2nd IF Trans.	72C182-9 *						

PRINTED BOARD

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ADMIRAL MODELS 691, 692, Y793, Y797, Y798, (Ch. 5E5, A, B)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L5	3rd IF Trans.	72C182-10 *						

* Specify color dot. ① Ch. 5EB5 uses Part #69B218-9. ② Ch. 5E5B uses Part #69B232-5.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B64-1	TR-2 ①		TA-30 ①	TR-2 ①	TY-27XT ①	① Remove frame and glue to printed board.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	15Ω	79B85-1	TR-15 ①				TR-15 ①		① Remove frame and glue to printed board

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	2 3/4"	PM	12-14Ω	78B125-3	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			Z		1015		M-15R	4 Required
	1.5V			130		635		M-14R	1 Required, Clock Versions

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	1N295	1N60	1N295	1N295	Detector (Pigtail)
M3	1N295	1N295	1N60	1N295	1N295	AVC (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuning Cap.	68C73-1	2 Gang (Ant. 123.1mmf Max., Osc. 73.4mmf Max.)
	Tuning Cap.	68B75-1	2 Gang , Ch. 5E5B
	Clock	91C32-5	

CABINETS & CABINET PARTS

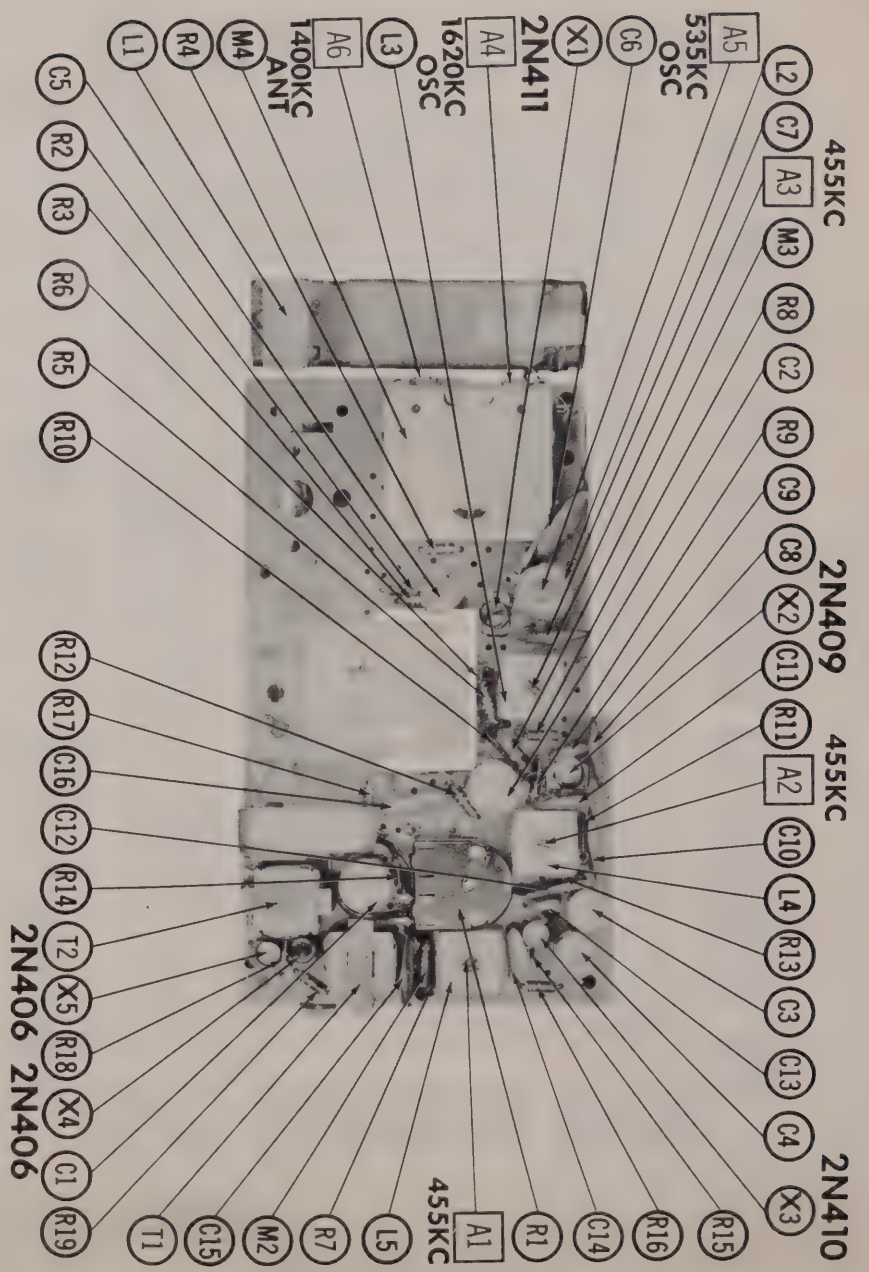
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33B327-2	Tuning, Models 691, 692
Knob	33D326-2	Tuning, Models Y793, Y797, Y798
Knob	33B326-1	Volume, Models 691, 692
Knob	33D326-1	Volume, Models Y793, Y797, Y798

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®
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ADMIRAL MODELS 703, 708 (Ch. 7P1)

ADMIRAL MODELS
703, 708 (Ch. 7P1)

MODEL 703

ADMIRAL MODELS
703, 708 (Ch. 7P1)

TRADE NAME	Admiral Models 703, 708 (Ch. 7P1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	535 - 1620KC
RATING	10MA @ 6 Volts DC (No Signal, Min. Volume) 25MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A3, A5 ..... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537
A4, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	Adjust for maximum output. Repeat step 1 until no further increase is noted.
3.	"	535KC	Tuning gang fully closed	"	A5	Adjust for maximum output.
4.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang. Repeat steps 2, 3 and 4.

DISASSEMBLY

1. Insert coin into slot on bottom edge of cabinet and twist. Remove back cover.
2. Remove 2 control knobs by pulling off.
3. Remove 4 chassis mounting screws.(at corners of printed board).
4. Remove chassis from cabinet.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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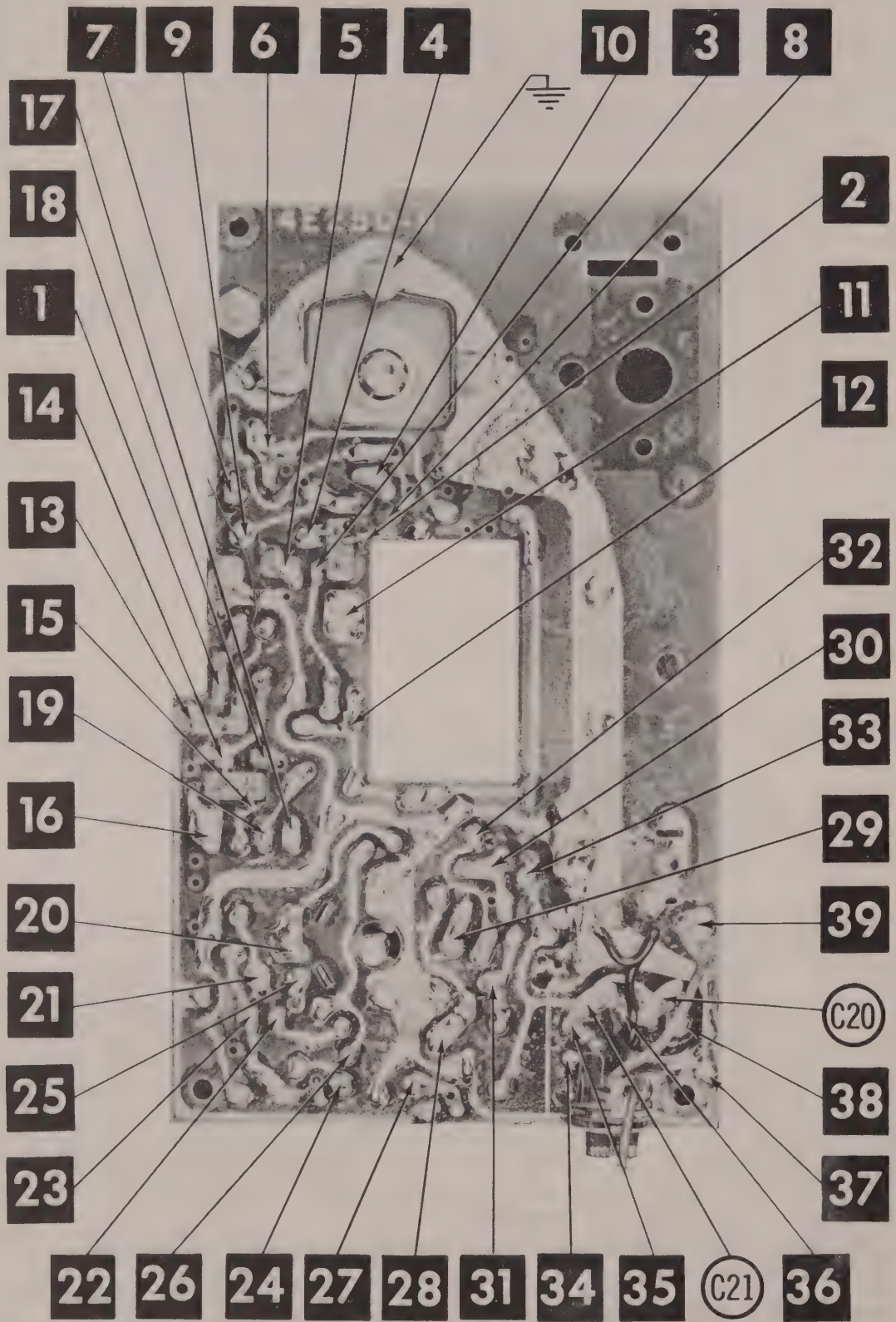
JF560

SET 478 FOLDER 5



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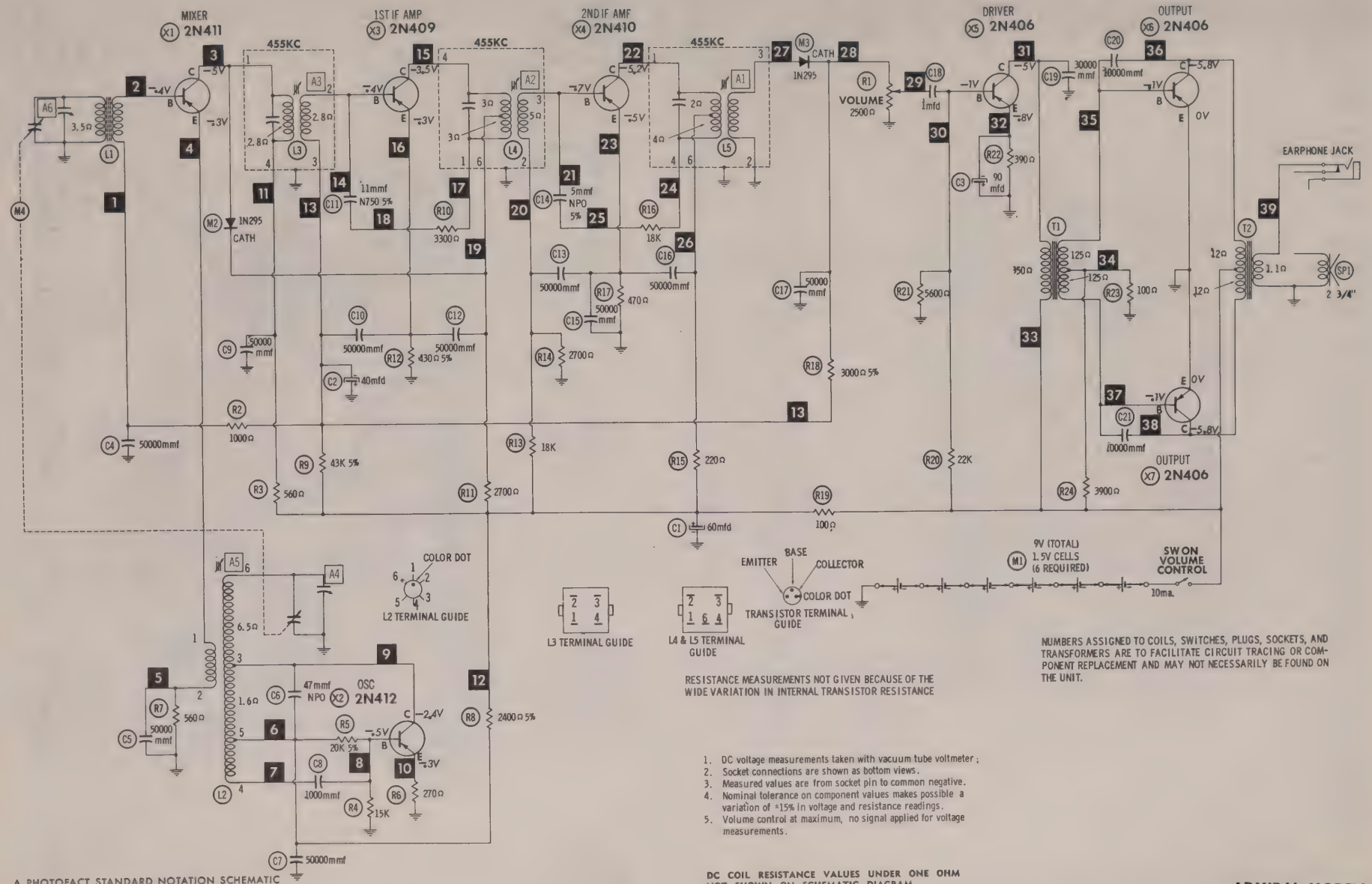
PRINTED BOARD



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ADMIRAL MODELS 703, 708 (Ch. 7P1)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Mixer		2N411	2N486	2N411	PNP
X2	2N412	Oscillator		2N412	2N486	2N412	PNP
X3	2N409	1st IF Amplifier		2N409	2N483	2N409	PNP
X4	2N410	2nd IF Amplifier		2N410	2N483	2N410	PNP
X5	2N406	Driver		2N406	2N633	2N406	PNP
X6	2N406	Output		2N406	2N633	2N406	PNP } Matched
X7	2N406	Output		2N406	2N633	2N406	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	60	6	67B32-8	BCD6050	ECPA-115	PET1260	ML75-6	VL-1097	
C2	40	3	67B32-9	BCD3035	ECPA-14	PET140	ML40-6	VL-1045	
C3	90	3	67B32-10	BCD3100	ECPA-17		ML100-3	VL-1051	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C5	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C6	47 NPO		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C7	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C9	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C10	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C11	11 N750 5%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCC-Q10
C12	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C13	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C14	5 NPO 5%		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-447	10TCC-V50
C15	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C16	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C17	50000		BPD-05	DD-503	H-05S5		TA-150	5HK-S50
C18	1mfd 3V	#65B45-15		UK-105				HY135

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	30000		BPD-03	DD-303	BYB6S3	CCD-303		5HK-S30
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	TA-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	TA-110	5HK-S10

Admiral Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/4	75B51-1					Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	560Ω	
R4	15K	
R5	20K 5%	
R6	270Ω	
R7	560Ω	
R8	2400Ω 5%	
R9	43K 5%	

ITEM No.	RATING	REMARKS
R10	3300Ω	
R11	2700Ω	
R12	430Ω 5%	
R13	18K	
R14	2700Ω	
R15	220Ω	
R16	18K	
R17	470Ω	

ITEM No.	RATING	REMARKS
R18	3000Ω 5%	
R19	100Ω	
R20	22K	
R21	5600Ω	
R22	390Ω	
R23	100Ω	
R24	3900Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	69B218-7						
L2	Osc. Coil	69B232-3 *						
L3	1st IF Trans.	72C182-8 *						
L4	2nd IF Trans.	72C182-9 *						
L5	3rd IF Trans.	72C182-10 *						

* Specify Color Dot.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B84-1	TR-2 ①		TA-30 ①	TR-2 ①	TY-27XT ①	①Remove frame and glue to printed board.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	14-16Ω	79B85-1	TR-15 ①				TR-15 ①		①Remove frame and glue to printed board.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	2 3/4"	PM	14-16Ω	78B125-3	27A06ZR	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	①		Z ①		1015 ①		M-15R①	① Six required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295		1N60	1N295	1N295	AVC (Pigtail)
M3	1N295		1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuning Cap.	68C73-1	2 Gang (Ant. 123.1mmf Max., Osc. 73.4mmf Max.)

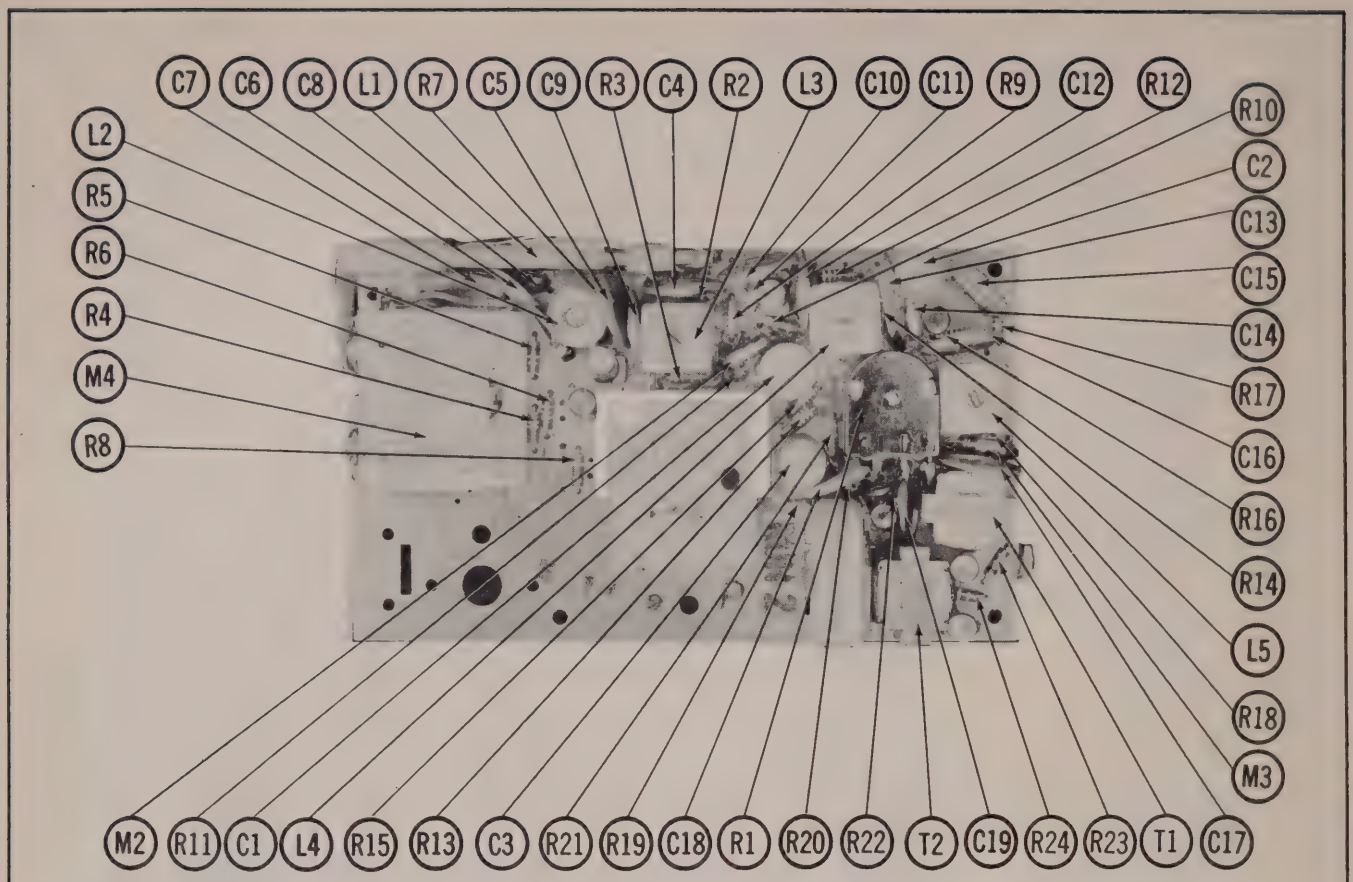
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

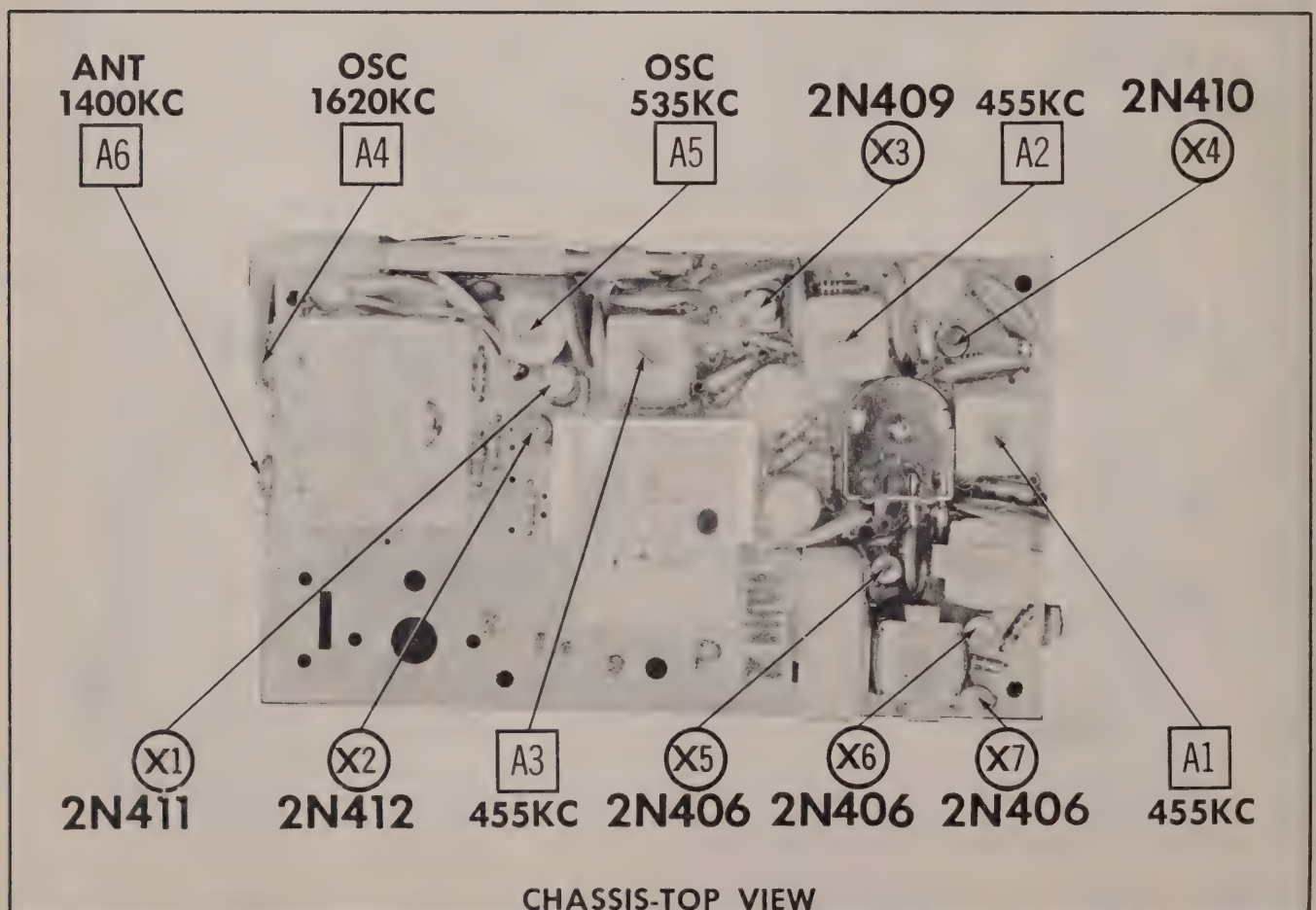
NAME	PART NO.	DESCRIPTION
Knob	33B327-2	Tuning
Knob	33B326-1	Volume
Cabinet Rear	34E141-5	Model 703
Cabinet Rear	34E141-7	Model 708
Cabinet Front	34E141-6	Model 703
Cabinet Front	34E141-8	Model 708
Handle	37A193-1	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



CHASSIS-TOP VIEW



CHASSIS-TOP VIEW

PHOTOFACT® Folder with CIRCUITRACE®

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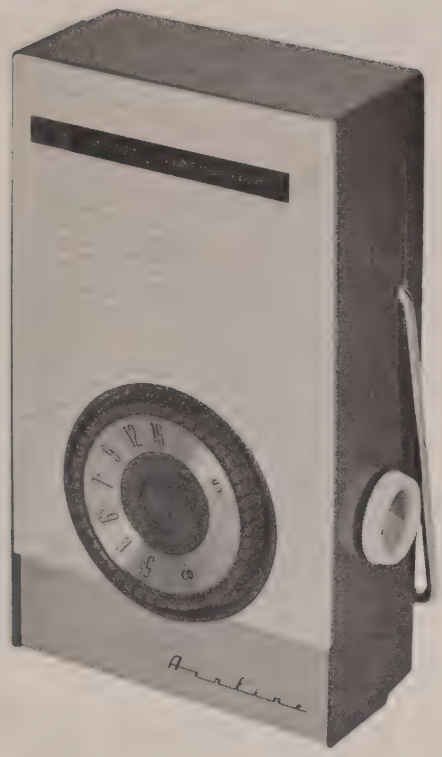
AIRLINE MODEL GTM-1201A

AIRLINE MODEL GTM-1201A



TRADE NAME	Airline Model GTM-1201A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	535 - 1625KC
RATING	8.5MA @ 6 Volts DC (No Signal, Min. Volume) 13MA @ 6 Volts DC (Signal, Normal Volume)

AIRLINE MODEL GTM-1201A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 ..... GENERAL CEMENT #9440
A4, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1625KC	"	"	A4	"
3.	"	600KC	"	"	A5	"
4.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY

1. Remove tuning knob. (Loop string under knob and pull up.)
2. Loosen 2 screws on cabinet back. Remove back.
3. Remove 2 hex head screws holding chassis to cabinet front.
4. Remove chassis, speaker, battery case, spacers and grommets.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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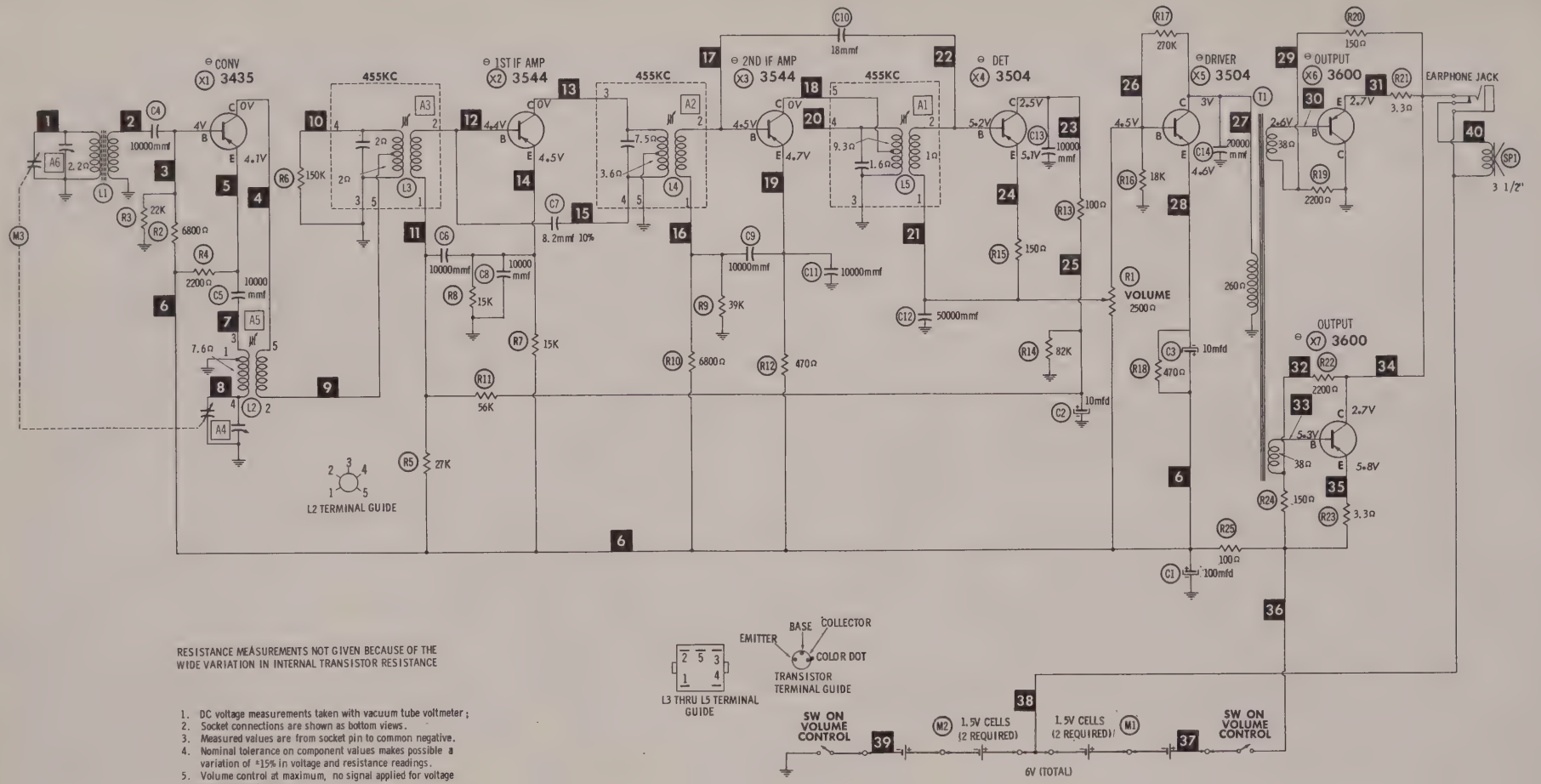

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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AIRLINE MODEL GTM-1201A

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	3435 *	Converter		2N412	2N486	2N412	PNP
X2	3544 ♦	1st IF Amplifier		2N411	2N483	2N411	PNP
X3	3544 ♦	2nd IF Amplifier		2N411	2N483	2N411	PNP
X4	3504 †	Detector		2N406	2N362	2N406	PNP
X5	3504 †	Driver		2N406	2N362	2N406	PNP
X6	3600 ‡	Output		2N408	2N633	2N408	PNP } Matched
X7	3600 ‡	Output		2N408	2N633	2N408	PNP } Pair

* Type 2N412 may be used in this application.
♦ Types 2N410, 3434 may be used in this application.
† Type 2N406 may be used in this application.
‡ Types 2N408, 2N406 may be used in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	7	218V013H15	PWE10100	EC100-10	TT15X100	ML100-15	VL-1140	
C2	10	6	218V012H18	PWE6010	EC10-6	TT6X10	ML10-6	VL-1087	
C3	10	6	218V012H18	PWE6010	EC10-6	TT6X10	ML10-6	VL-1087	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C6	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	8.2	10%	#217V018A29	NPO-SI 8.2		C10V82C			10TCC-V82
C8	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C10	18			DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C11	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	50000			BPD-05	DD-503	PM6S5	6DP-3-503	GP150	5HK-S50
C13	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	20000			BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20

Airline Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	270V068H01					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	22K	
R4	2200Ω	
R5	27K	
R6	150K	
R7	15K	
R8	15K	
R9	39K	

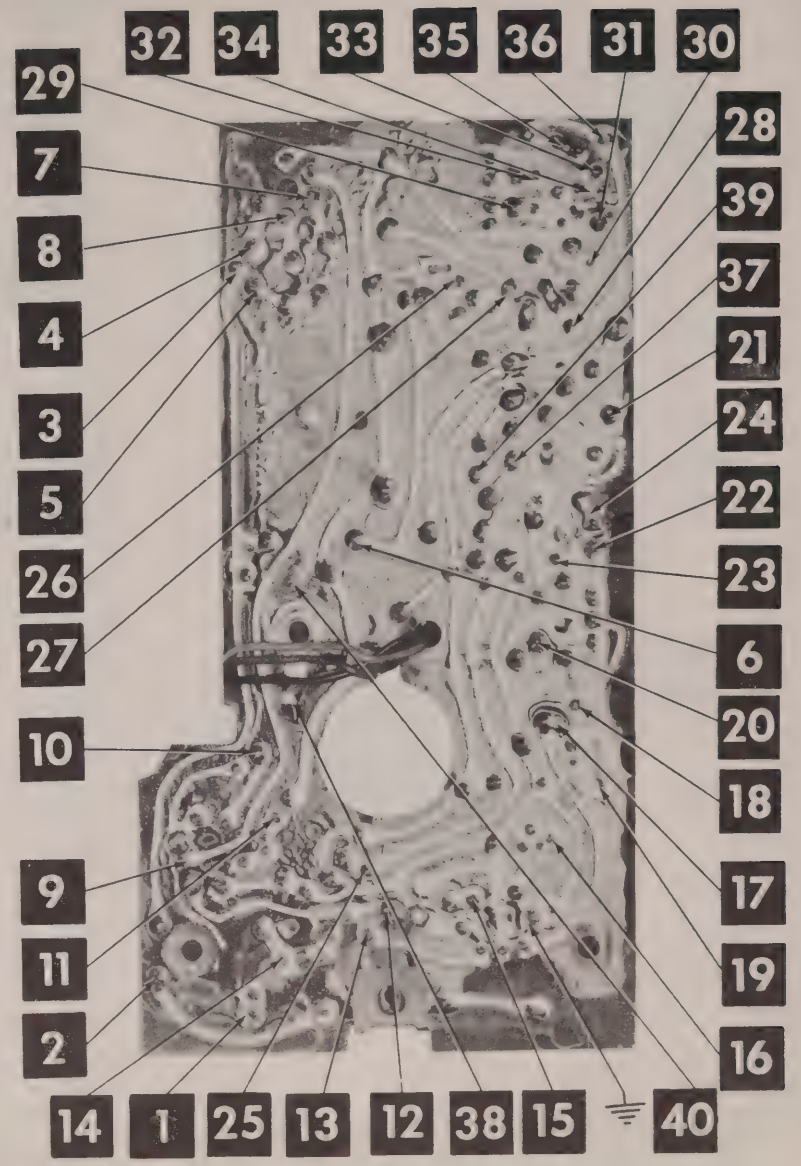
ITEM No.	RATING	REMARKS
R10	6800Ω	
R11	56K	
R12	470Ω	
R13	100Ω	
R14	82K	
R15	150Ω	
R16	18K	
R17	270K	

ITEM No.	RATING	REMARKS
R18	470Ω	
R19	2200Ω	
R20	150Ω	
R21	3.3Ω	#259V003H27
R22	2200Ω	
R23	3.3Ω	#259V003H27
R24	150Ω	
R25	100Ω	

Airline Part Number.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AIRLINE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	310V029H01						
L2	Osc. Coil	230V057H01						
L3	1st IF Trans.	235V047H03						
L4	2nd IF Trans.	235V047H01						
L5	3rd IF Trans.	235V047H02						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	1	430V076H01						
		SEC.2							
		1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	3½"	PM	43-46Ω	570V062H01		

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	67 *		Z *		1015 *		M-15R *	* Two used
M2	1.5V	67 *		Z *		1015 *		M-15R *	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuning Cap.	330V020H02	2 Gang (Ant. 10-130mmf, Osc. 15-105mmf)

CABINETS & CABINET PARTS

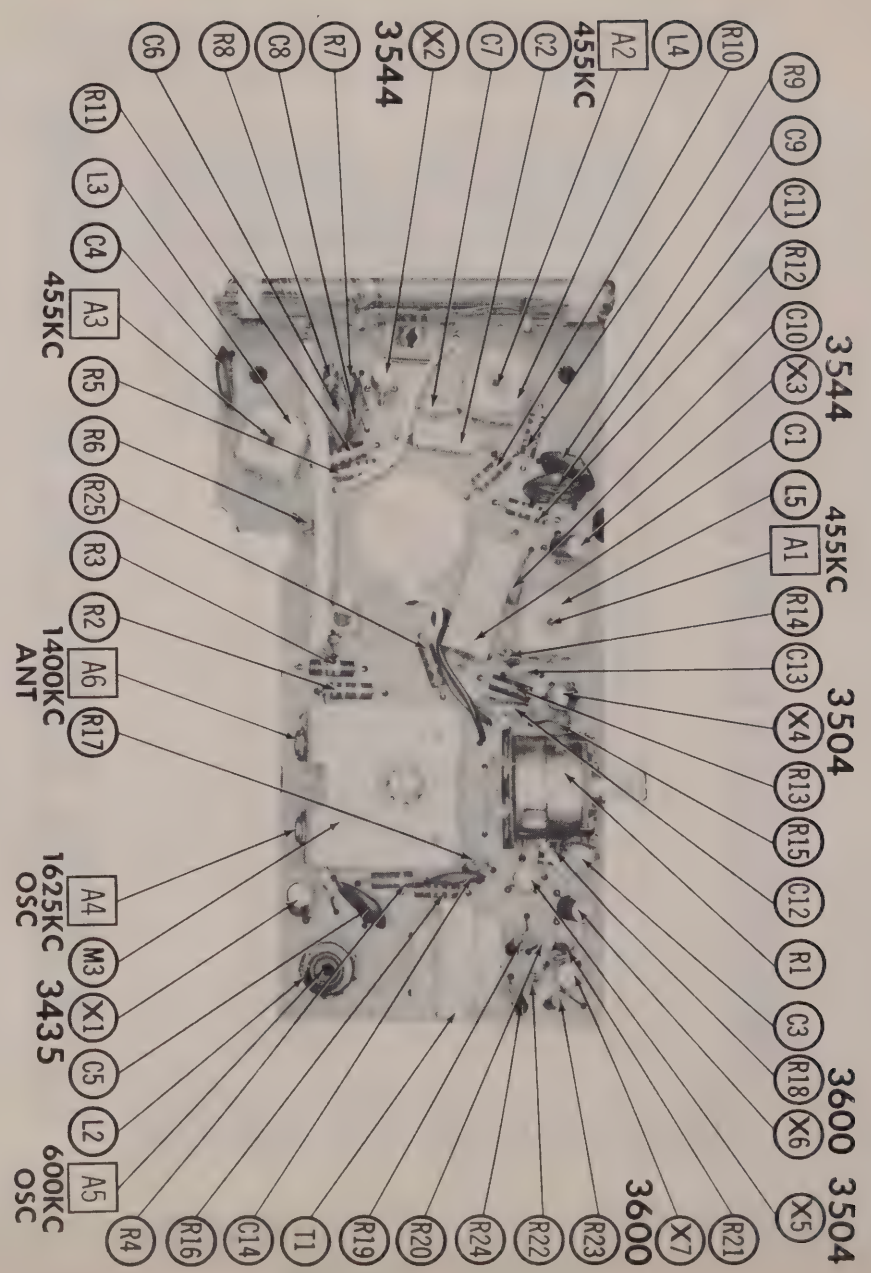
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V080H04	Tuning
Knob	559V052H01	Volume (Includes Compression Ring)
Cabinet Front	513V045H01	Includes Escutcheon & Grille
Cabinet Back	513V024H02	
Handle	558V151H01	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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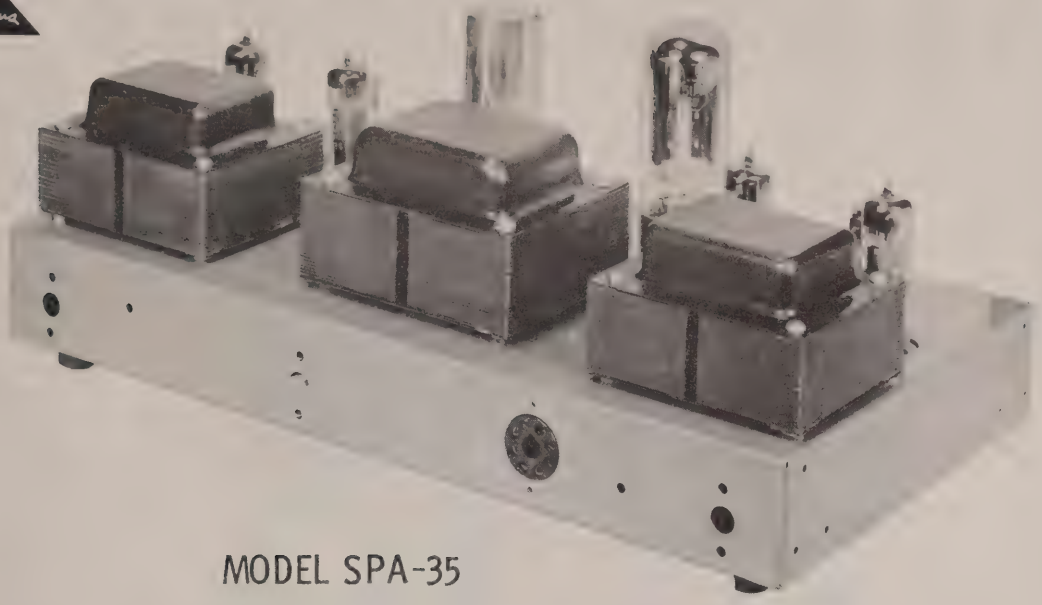
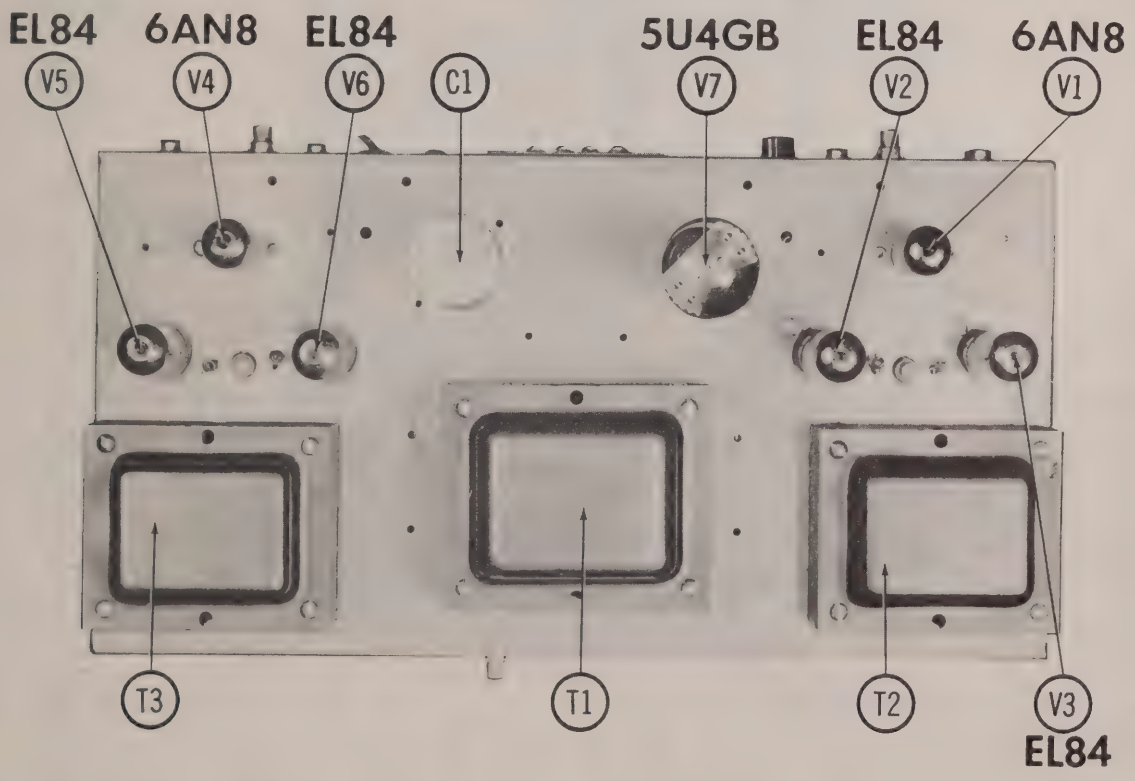


MODEL SPA-35

TRADE NAME	Arkay Models SPA-35, SPA-55
MANUFACTURER	Arkay International, Inc., 88-06 Van Wyck Expressway, Jamaica 18, N. Y.
TYPE SET	AC Operated 7 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 150 Watts, 1.5 Amp. @117 Volts AC



ARKAY MODELS
SPA-35, SPA-55

ARKAY MODELS
SPA-35, SPA-55

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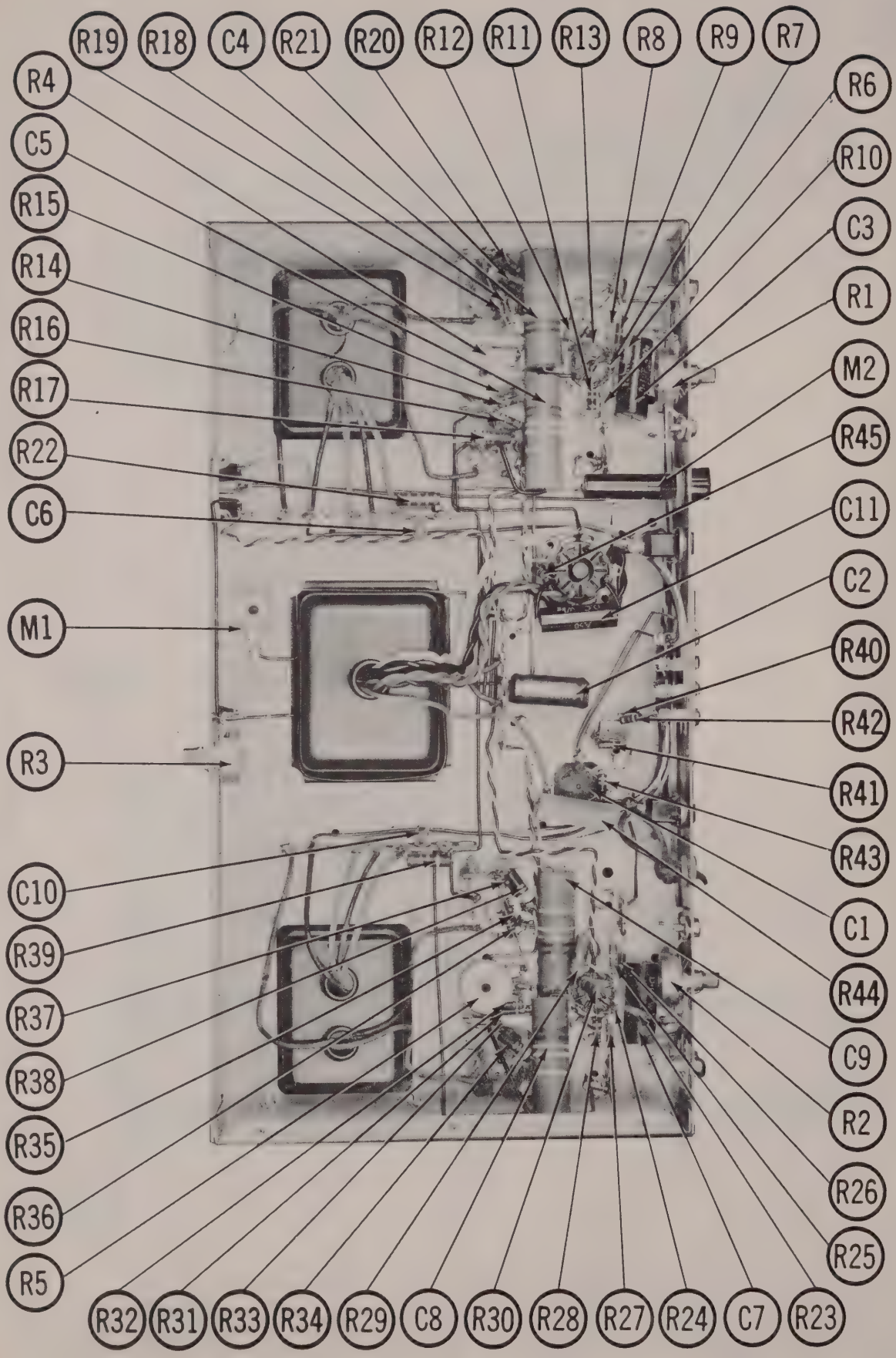
JV548

SET 478 FOLDER 7



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Phase Inverter	6AN8
V2	Channel 1 Output	EL84 (6BQ5A, 7189)*
V3	Channel 1 Output	EL84 (6BQ5A, 7189)*
V4	Channel 2 AF Amp. - Phase Inverter	6AN8
V5	Channel 2 Output	EL84 (6BQ5A, 7189)*
V6	Channel 2 Output	EL84 (6BQ5A, 7189)*
V7	Rectifier	5U4GB

* Alternate. Model SPA-55 uses 6L6GB.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ARKAY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH3-44	C0350	FP377	TMT-40	TVL-3787	
B	■40	450							
C	▬40	450							
C2	100	25		SRE25V100	BBR100-25	TC2501	ML100-25	TE-1211	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C4	.22 400V 10%	Note 1	V84C4P22-10%		PM4P22	4DP-5-224	GEM-4022	4TM-P22
C5	.22 400V 10%	Note 1	V84C4P22-10%		PM4P22	4DP-5-224	GEM-4022	4TM-P22
C6	1500	Note 2	BPD-0015	DD-152	BYA10D15	CCD-152	GP215	10TS-D15
C7	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C8	.22 400V 10%	Note 1	V84C4P22-10%		PM4P22	4DP-5-224	GEM-4022	4TM-P22
C9	.22 400V 10%	Note 1	V84C4P22-10%		PM4P22	4DP-5-224	GEM-4022	4TM-P22
C10	1500	Note 2	BPD-0015	DD-152	BYA10D15	CCD-152	GP215	10TS-D15
C11	.05 400V	Note 3	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

Note 1. Model SPA-55 uses .1mfd in this application.
Note 2. Model SPA-55 uses 820mmf in this application.
Note 3. Not used in Model SPA-55.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARKAY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	FM8-2	BX-69	B47-1meg-S	Bll-137	SU-54	Input Level, Channel 1
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R2A	1meg	½	FM8-2	BX-69	B47-1meg-S	Bll-137	SU-54	Input Level, Channel 2
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R3A	1meg	½	FM8-2	BX-69	B47-1meg-S	Bll-137	SU-54	Bias, Note 1
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R4A	5000Ω	½	FM8-3	BX-10	B47-5000-S	Bll-114	SU-14	Balance, Channel 1
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	5000Ω	½	FM8-3	BX-10	B47-5000-S	Bll-114	SU-14	Balance, Channel 2
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

Note 1. Model SPA-55 uses 5000Ω in this application. (Part #FM8-3).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	270K	
R7	470K	
R8	270K	
R9	1.5meg	
R10	680Ω	
R11	47Ω	
R12	47K 5% 1W	
R13	47K 5% 1W	
R14	100K 5%	
R15	47K 5%	
R16	1000Ω	
R17	4.7Ω 5%	Note 1
R18	100K 5%	
R19	47K 5%	
R20	1000Ω	
R21	4.7Ω 5%	Note 1
R22	1200Ω 1W	
R23	270K	
R24	470K	
R25	270K	
R26	1.5meg	
R27	680Ω	
R28	47Ω	
R29	47K 5% 1W	
R30	47K 5% 1W	
R31	100K 5%	
R32	47K 5%	
R33	1000Ω	
R34	4.7Ω 5%	Note 1
R35	100K 5%	
R36	47K 5%	
R37	1000Ω	
R38	4.7Ω 5%	Note 1
R39	1200Ω 1W	
R40	4700Ω	Note 2
R41	560Ω	
R42	4700Ω	Note 2
R43	20K	
R44	3300Ω 5W	Note 3
R45	47K 5%	Note 1

Note 1. Not used in Model SPA-55.
Note 2. Model SPA-55 uses 6800Ω in this application.
Note 3. Model SPA-55 uses 6800Ω in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA ARKAY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1.5A	800 VCT @.2A	5V@ 3A	6.3V@ 3.9A				24R07	P-2955		PM-8412	24R07	R-21B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ARKAY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5800Ω	16Ω, tap @ 8Ω, 4Ω	SPA350H							
T3	5800Ω	16Ω tap @ 8Ω, 4Ω	SPA350H							

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ARKAY PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.002A	①	D5410 ①	1159①	10①		① Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ARKAY PART No. FUSE	ARKAY PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	8AG	2A 125V			362002 (8AG 2A 125V)	341001	AGX 2	HJM-H

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

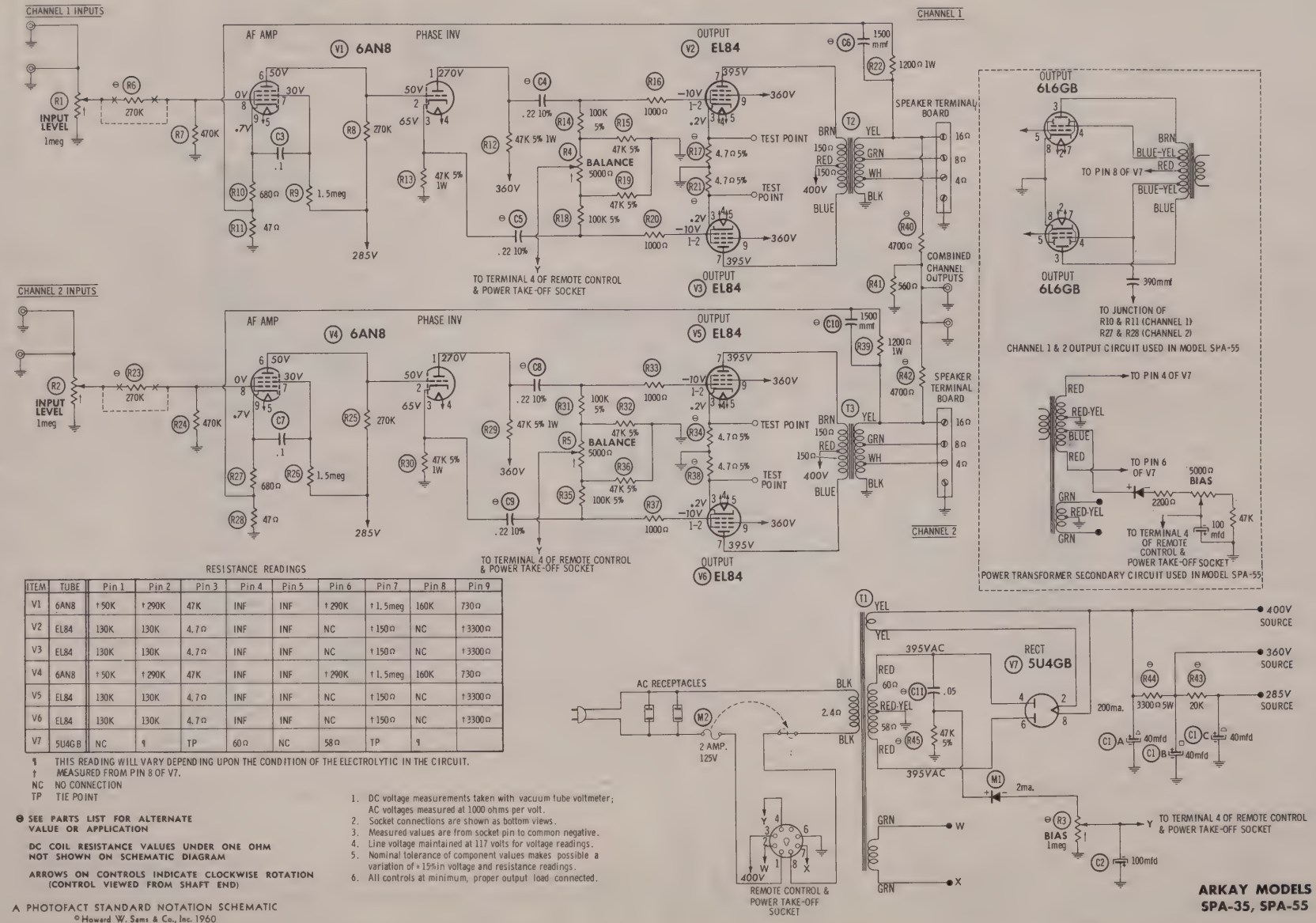
ADJUSTMENTS

BIAS (R3)

1. Turn Level controls fully counterclockwise. (Or Disconnect input leads)
2. Connect a DC VTVM from arm of Bias control to chassis.
3. Adjust Bias control for meter reading of — 15V (Model SPA-35) or — 44 Volt (Model SPA-55).
4. Repeat adjustment.

BALANCE (R4, R5)

1. Turn Level controls fully counterclockwise. (Or disconnect input leads).
2. Adjust Balance controls for minimum hum from speakers.
3. A scope or meter may also be connected across the speaker terminals for a more accurate visual adjustment.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AN8	†50K	†290K	47K	INF	INF	†290K	†1.5meg	160K	730Ω
V2	EL84	130K	130K	4.7Ω	INF	INF	NC	†150Ω	NC	†3300Ω
V3	EL84	130K	130K	4.7Ω	INF	INF	NC	†150Ω	NC	†3300Ω
V4	6AN8	†50K	†290K	47K	INF	INF	†290K	†1.5meg	160K	730Ω
V5	EL84	130K	130K	4.7Ω	INF	INF	NC	†150Ω	NC	†3300Ω
V6	EL84	130K	130K	4.7Ω	INF	INF	NC	†150Ω	NC	†3300Ω
V7	5U4GB	NC	¶	TP	60Ω	NC	58Ω	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V7.
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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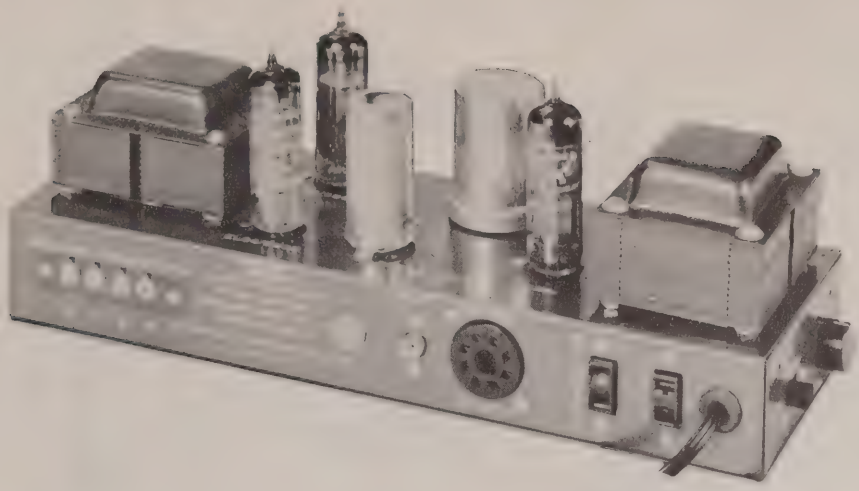
ARKAY MODELS SPA-35, SPA-55

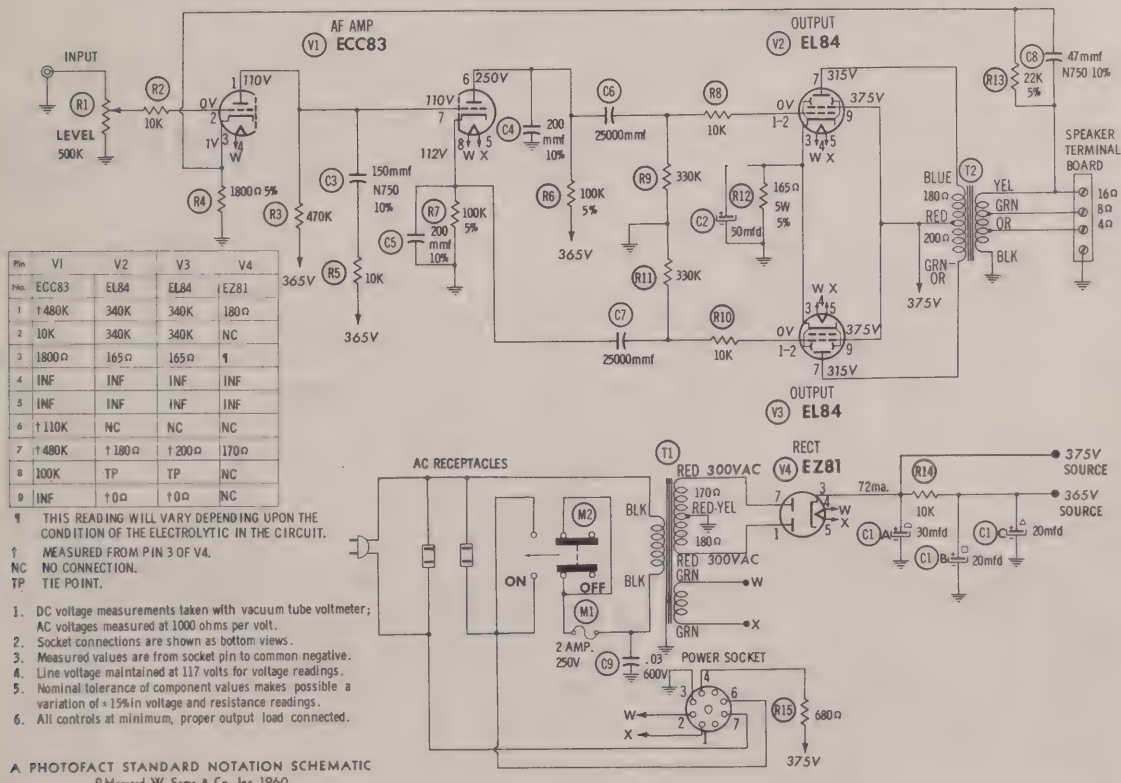
PHOTOFACT® Folder

EICO MODEL HF-14

EICO MODEL
HF-14



TRADE NAME	Eico Model HF-14
MANUFACTURER	Electronic Instrument Co., Inc., 3300 Northern Blvd., Long Island City 1, N. Y.
TYPE SET	AC Operated 4 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 59 Watts, .57 Amp. @ 117 Volts AC



Pin No.	V1	V2	V3	V4
1	↑480K	340K	340K	180Ω
2	10K	340K	340K	NC
3	1800Ω	165Ω	165Ω	¶
4	INF	INF	INF	INF
5	INF	INF	INF	INF
6	↑110K	NC	NC	NC
7	↑480K	↑180Ω	↑200Ω	170Ω
8	100K	TP	TP	NC
9	INF	↑0Ω	↑0Ω	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 3 OF V4.
NC NO CONNECTION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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JX624

DATE 3-60 SET 478 FOLDER 8

EICO MODEL
HF-14

SET 478 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	AF Amp.	ECC83 (12AX7)*
V2	Output	EL84 (6BQ5)*
V3	Output	EL84 (6BQ5)*
V4	Rectifier	EZ81 (6CA4)*

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EICO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲30	450	24011	AFH3-37	C0280	FP238	TMT-35	TVL-3781	
B	■20	450							
C	▲20	450							
C2	50	25	23007	SRE25V50	BBRD50-25	TC29	TD-50-25	TE-1209	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	150 N750 10%		N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C4	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C5	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C6	25000	#22517				6DP-3-253	GEM-6125	5HK-S25
C7	25000	#22517				6DP-3-253	GEM-6125	5HK-S25
C8	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C9	.03 600V		P688N-03	DD-303	CUB6S3	6DP-3-303	GEM-613	6TM-S3

Eico Part Number

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EICO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	18050	AB-60	A47-500K-Z	B13-133	U48	Level
B	Shaft			AK-1	FKS-1/4	SK-2		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	10K	
R3	470K	
R4	1800Ω 5%	
R5	10K	
R6	100K 5%	
R7	100K 5%	
R8	10K	
R9	330K	
R10	10K	
R11	330K	
R12	165Ω 5% 5W	
R13	22K 5%	
R14	10K	
R15	680Ω	

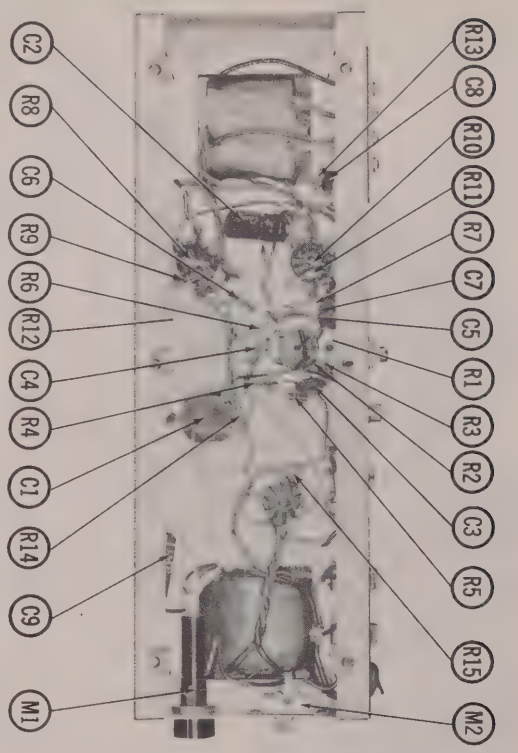
TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA EICO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .57A	600 VCT @.072A	6.3V@ 2.8A	30019						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA EICO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7000Ω CT	16Ω tap @ 8Ω, 4Ω	32005							

CHASSIS—BOTTOM VIEW



FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA EICO PART No. FUSE	EICO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 250V	91000	97800	312002 (3AG 2A 250V)	341001	AGC2	HKP CC

MISCELLANEOUS

ITEM No.	PART NAME	EICO PART No.	NOTES
M2	Switch	62004	Off-On (DPST, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

EMERSON MODELS 868, 869 (Ch. 120350)

EMERSON MODELS 868,
869 (Ch. 120350)

MODEL 868

EMERSON MODELS 868,
869 (Ch. 120350)

TRADE NAME	Emerson Models 868, 869 (Ch. 120350)
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd St., New York 11, N.Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	540-1650KC
RATING	20MA @ 9 Volts DC (No Signal, Min. Volume) 24MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signl generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 .. GENERAL CEMENT #5097, 8727
WALSCO #2515
A4, A5 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.	Loop	1650KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal	"	A5	"
4.	"	600KC	Tune to 600KC signal	"	A6	Adjust for maximum output while rocking tuning gang. Repeat steps 2 thru 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	Emerson Part No.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	815020	Converter			2N486		PNP
X2	815021	IF Amplifier			2N484		PNP
X3	815022	Driver			2N362		PNP
X4	815024 *	Output			2N631		PNP

* Some versions may use Part #815023 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	50	10	925398					VL-2250	
B	50	10						TE-1119.3	
C	100	10							
C2A	100	10	925399		BBR100-15	TT15X100	TD-100-15	TE-1116	
B	15	10			BBR20-25	TT12X5	TD-16-150	TE-1119.3	
C3	5	10	925401	XPP-10005	NLW5-15	TT12X5	ML5-15	TE-1127	
C4	2	10	925400	XPP-10002	NLW2-50	TT12X2	ML2-15	TE-1121	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C8	4.4 NPO 5%	#928762						
C9	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C11	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20

Emerson Part No.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	4000Ω	½	390531	B-11		Q13-114	U12	Volume
B	Switch			KR-1		76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

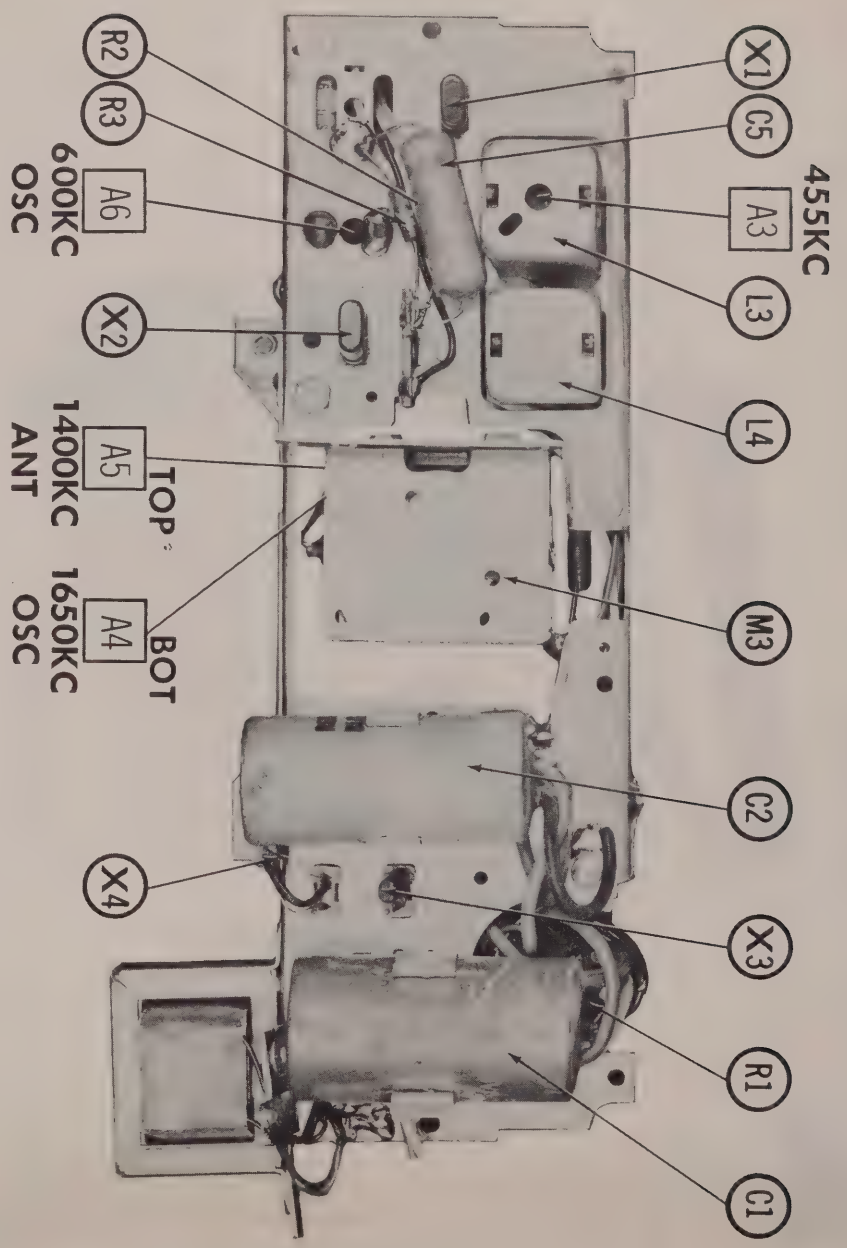
ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	18K	
R4	3900Ω	
R5	1000Ω	
R6	1000Ω	

ITEM No.	RATING	REMARKS
R7	150K	
R8	15K	
R9	4700Ω	
R10	33K	
R11	3Ω	Note 1

ITEM No.	RATING	REMARKS
R12	1000Ω	
R13	3300Ω	
R14	470Ω	
R15	47Ω	
R16	220Ω	

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		EMERSON PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	700124						
L2	Osc. Coil	716115						
L3	Input IF	720286						
L4	Output IF	720287						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5-5	1	734148						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	320Ω	3-4Ω	(Part of SP1)							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	180162		

BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	818116		D6		276		M-1603	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	817038	1N60	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

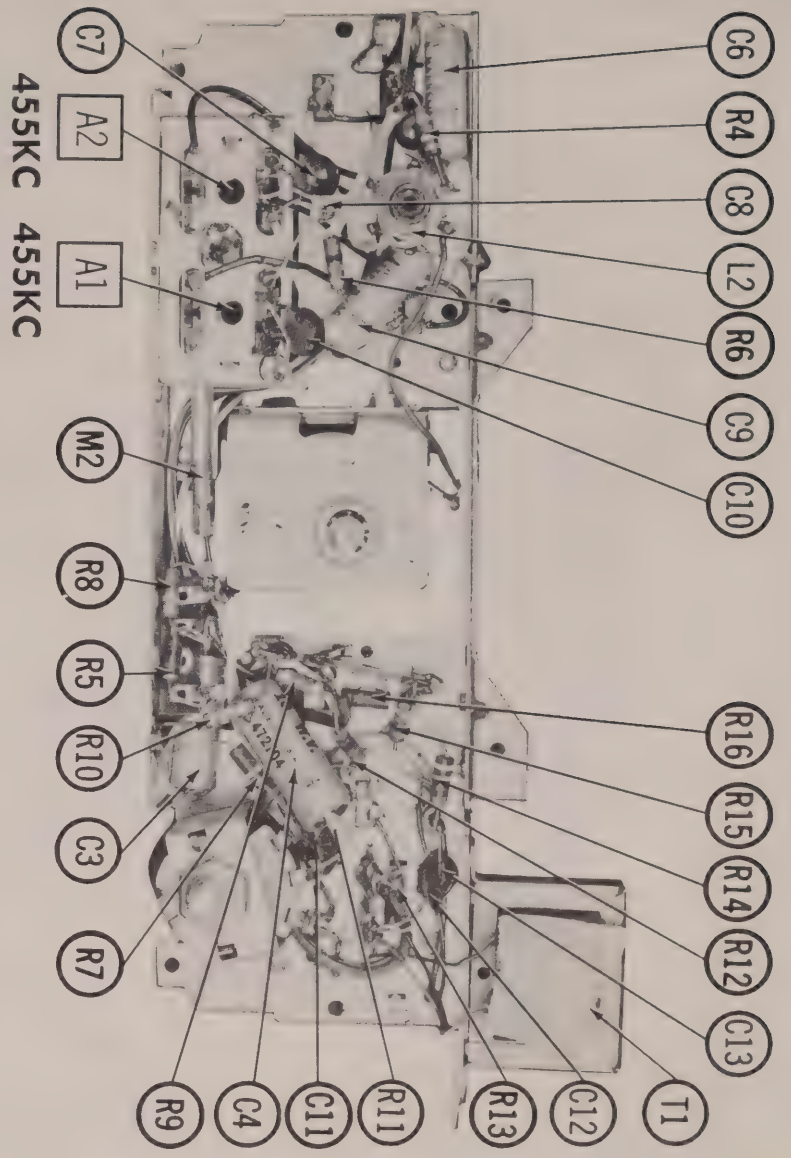
ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Tuning Cap.	900165	2 Gang (Ant. 10-230mmf, Osc. 32-132mmf)

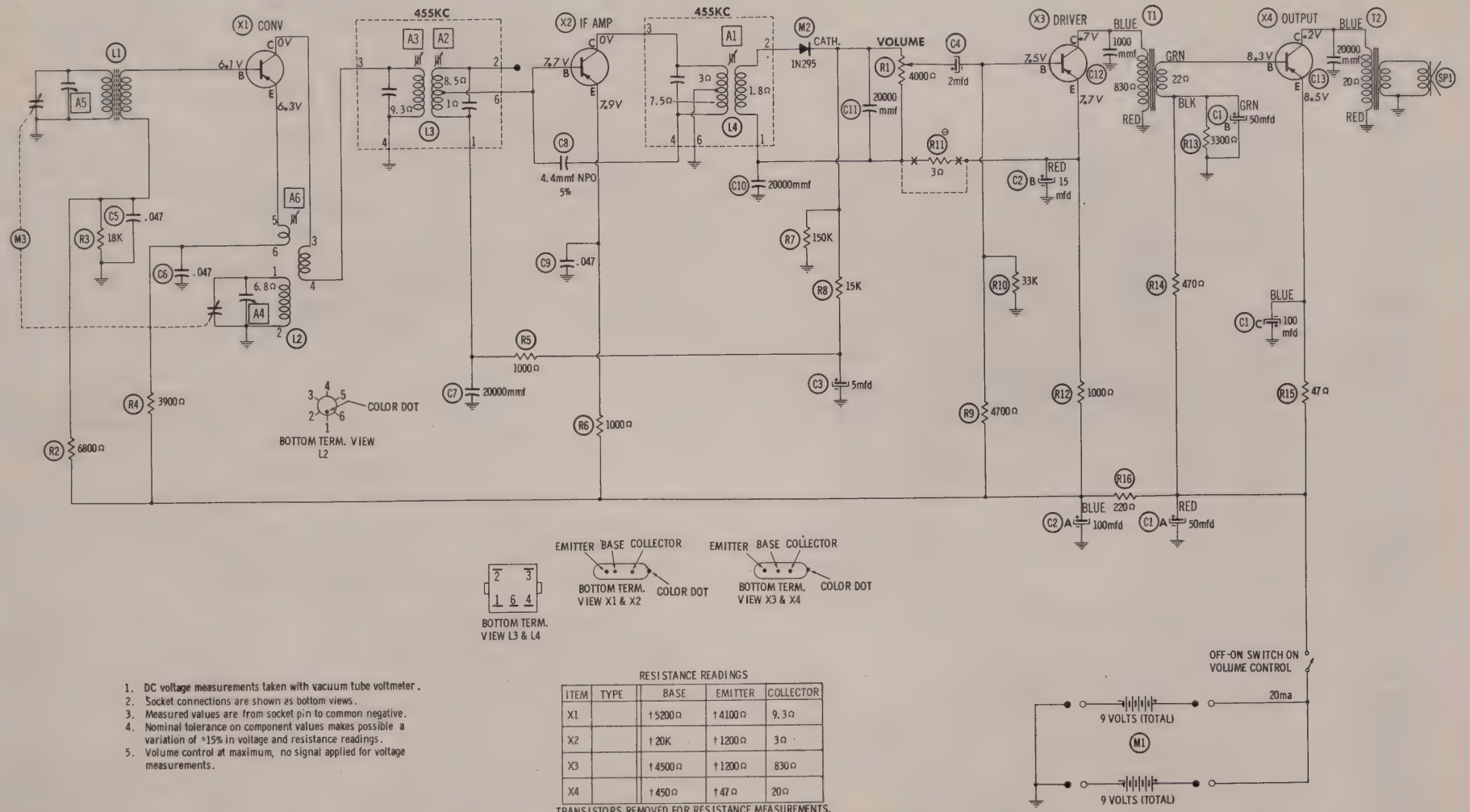
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	460769	Tuning (Specify Color)
Knob	460863	Volume (Specify Color)
Handle	961980	Less Lock Nut, Base Plate & Indexing Rotor (Specify color)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1		†5200Ω	†4100Ω	9.3Ω
X2		†20K	†1200Ω	3Ω
X3		†4500Ω	†1200Ω	830Ω
X4		†450Ω	†47Ω	20Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF C1A AND R16.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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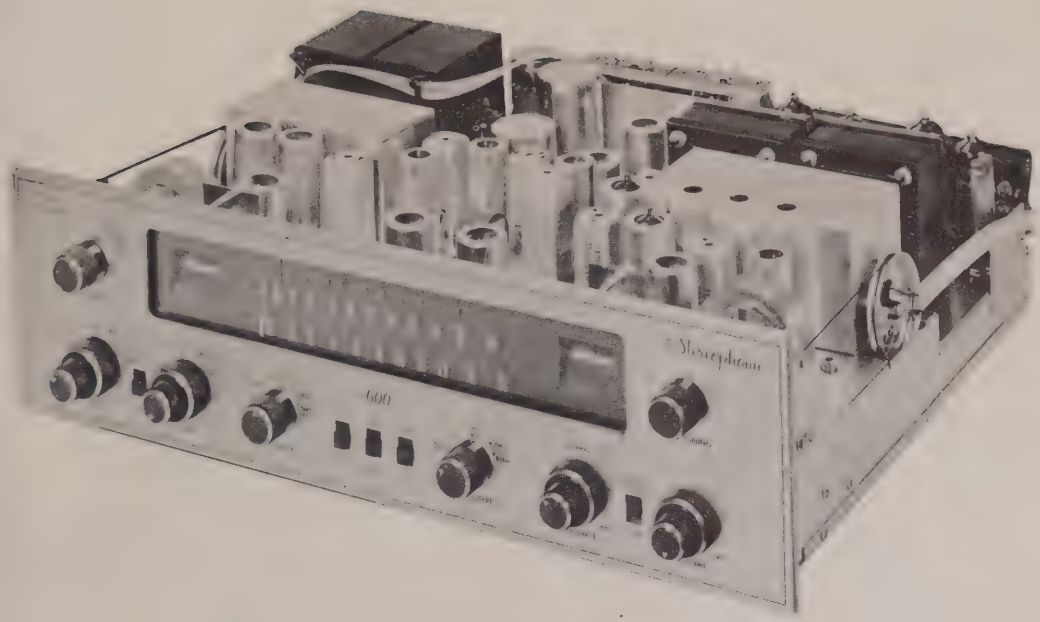
EMERSON MODELS 868, 869 (Ch. 120350)

PHOTOFACT® Folder

FISHER MODEL
TA-600

FISHER MODEL
TA-600

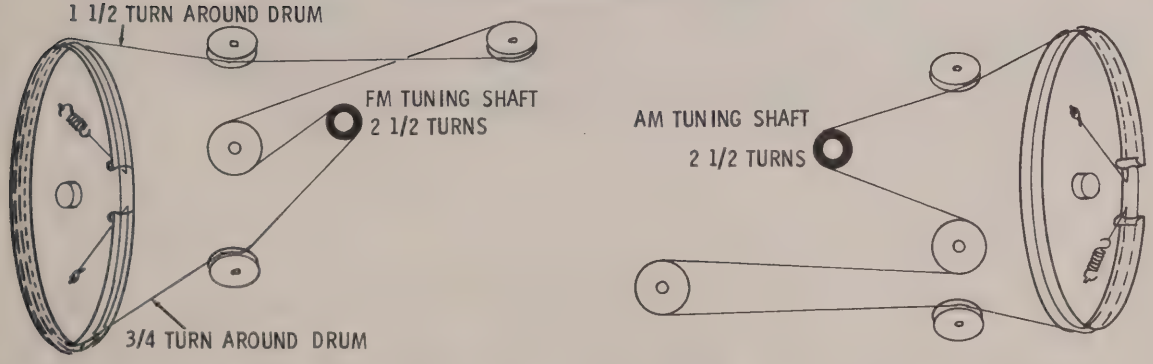


FISHER MODEL
TA-600

TRADE NAME	Fisher Model TA-600		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.		
TYPE SET	AC Operated 22 Tube FM-AM Receiver With Stereo Output		
POWER SUPPLY	105-120 Volts AC, 50-60 Cycles	RATING	165 Watts, 1.4 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	550-1600KC	FREQ. MOD.	88-108MC

DIAL CORD STRINGING

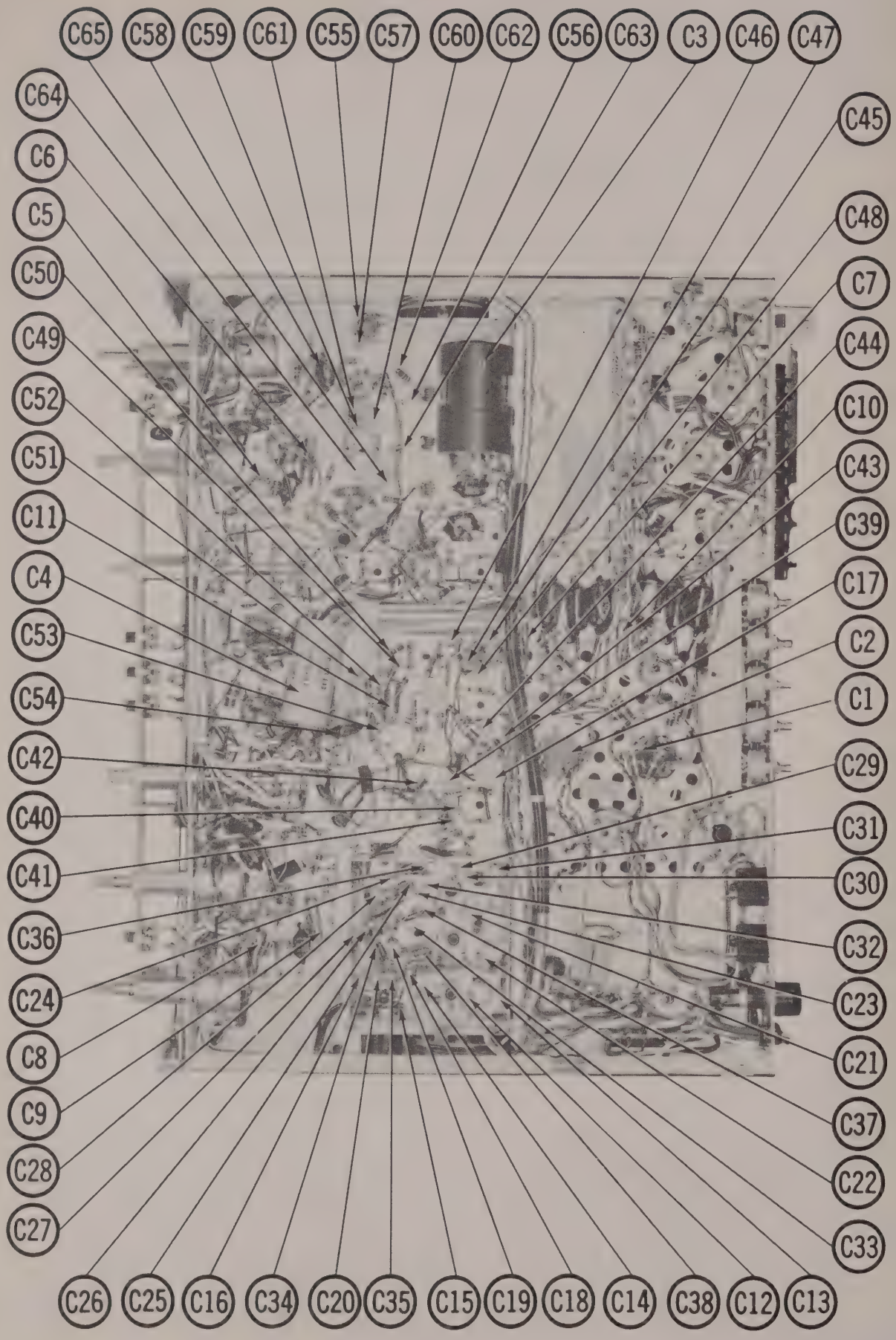
BOTH TUNING GANGS FULLY CLOSED



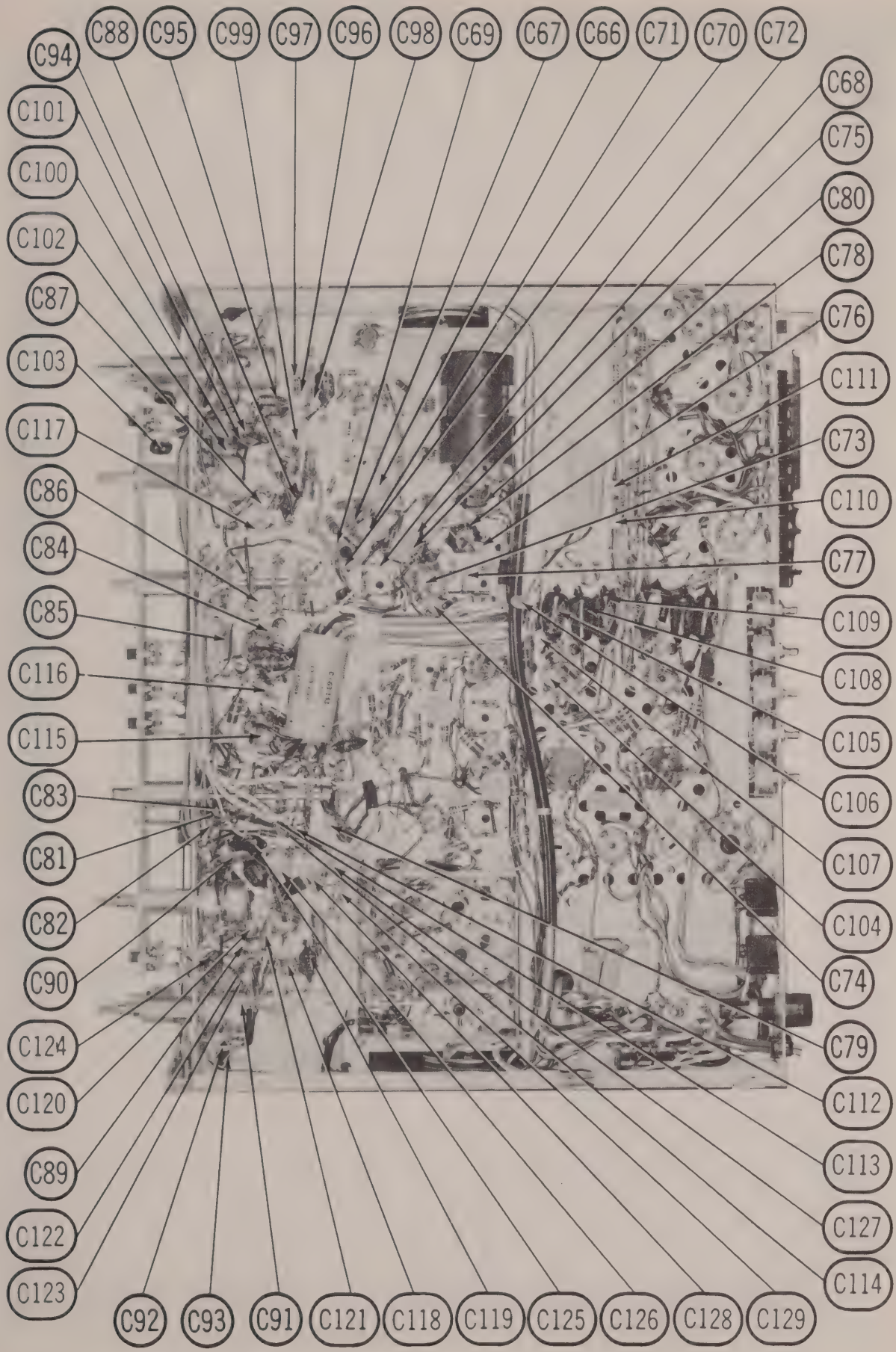
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

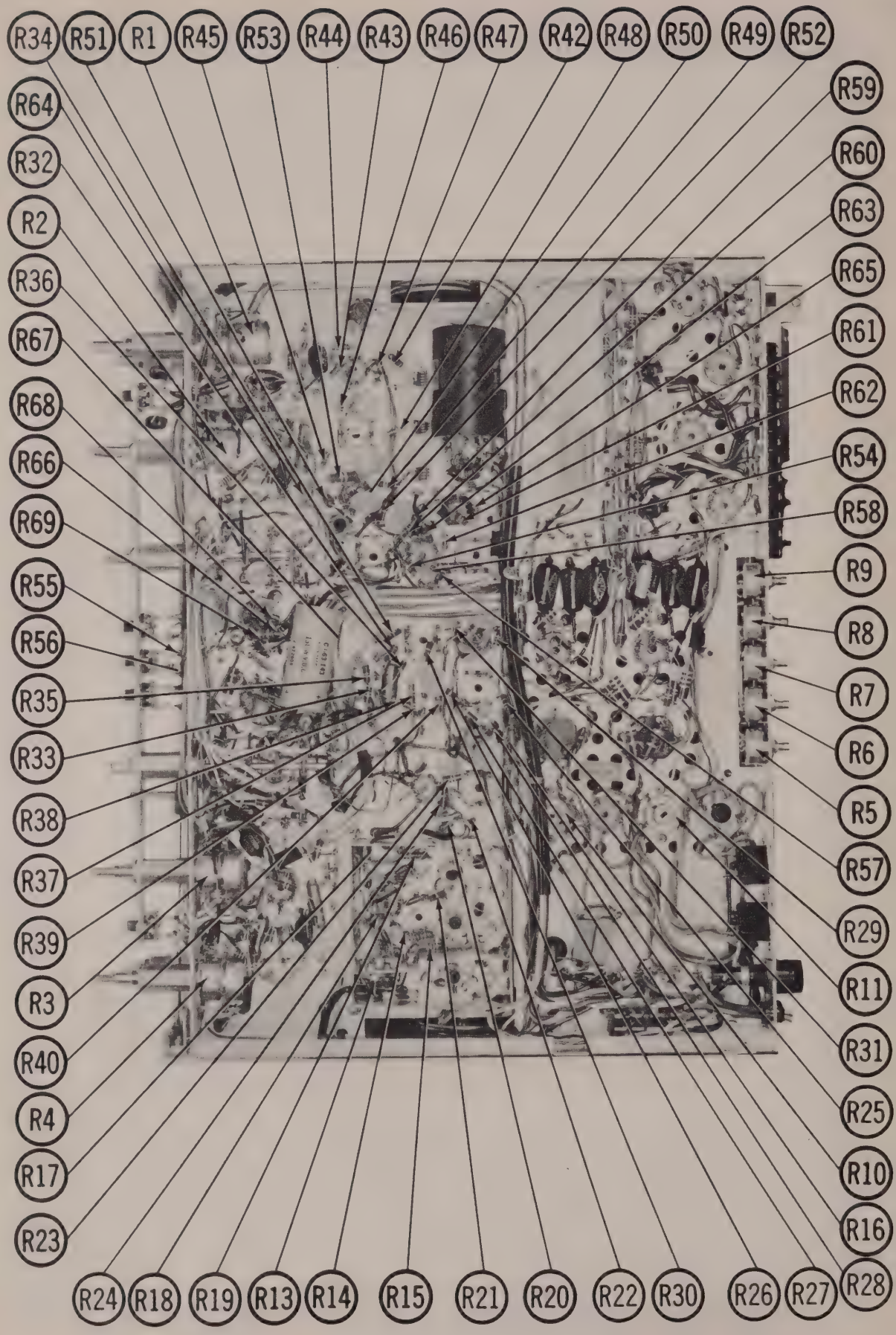
JK620



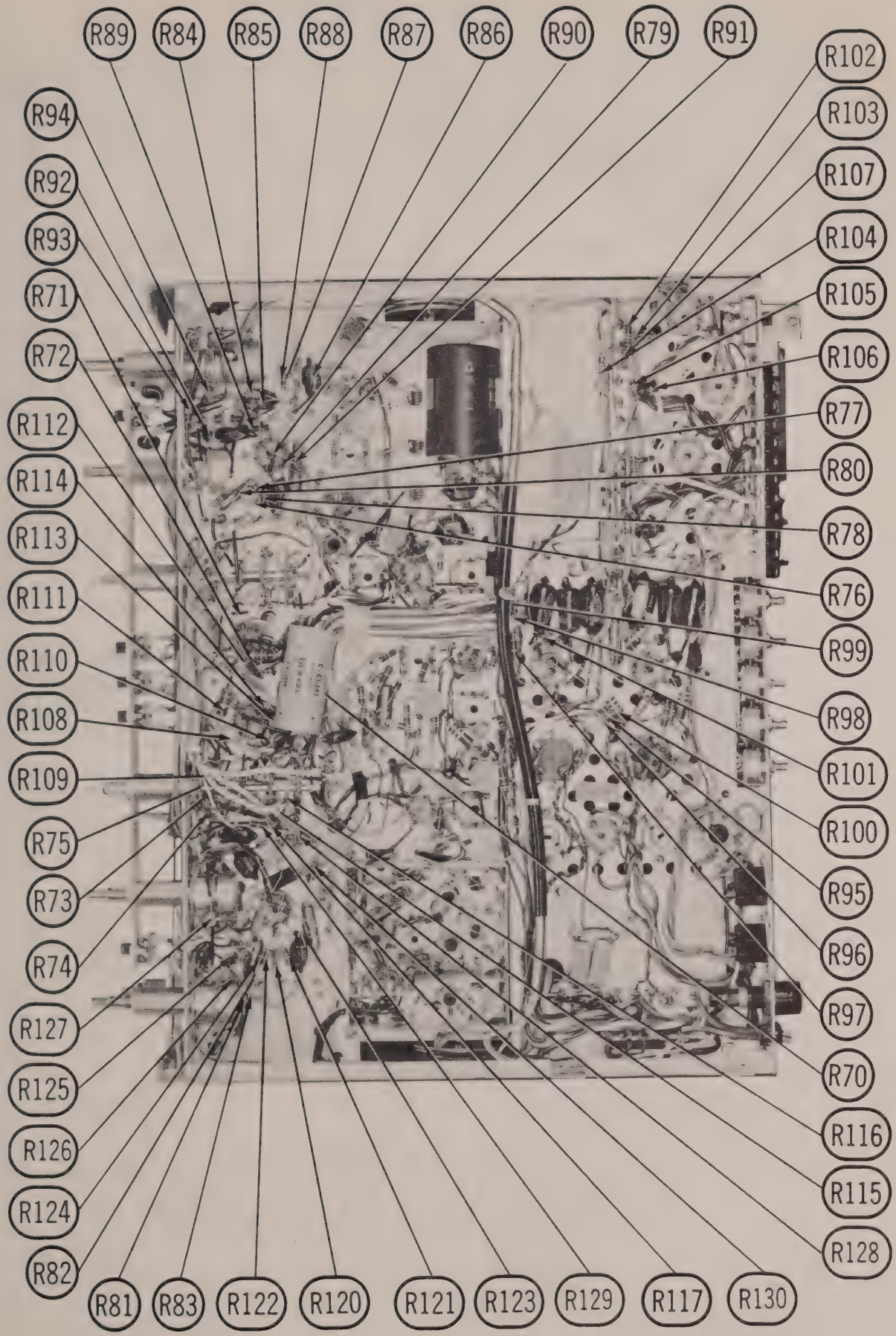
CHASSIS BOTTOM VIEW - CAPACITOR IDENT. (C1-C65)



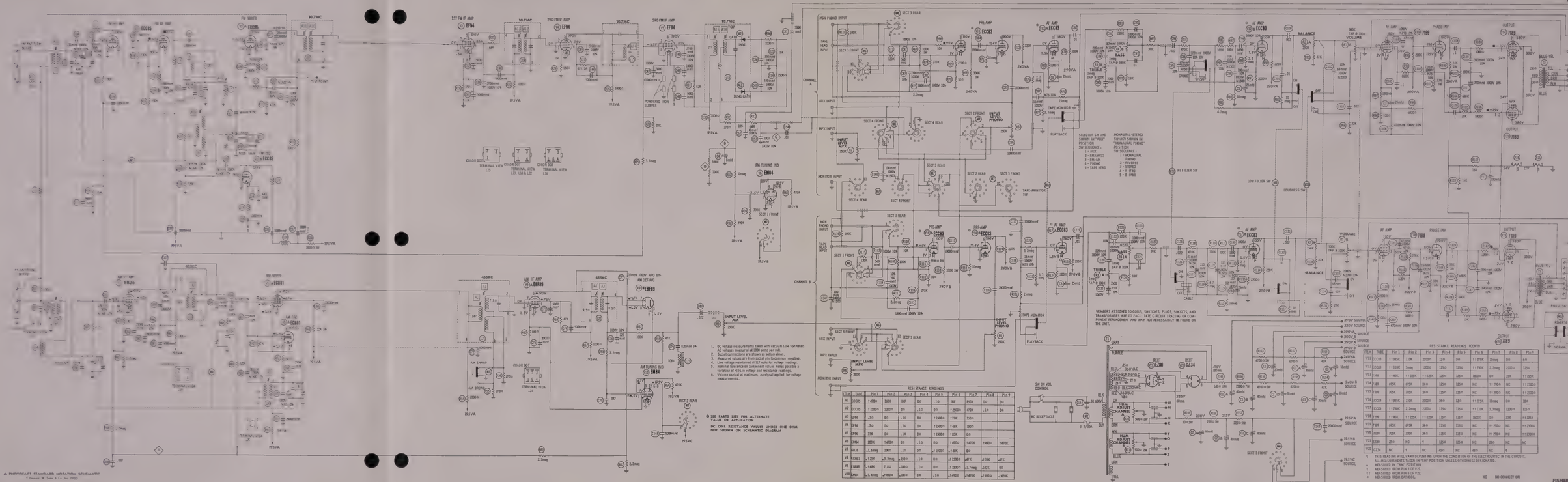
CHASSIS BOTTOM VIEW - CAPACITOR IDENT. (C66-C129)



CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R1-R68)



CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R70-R130)



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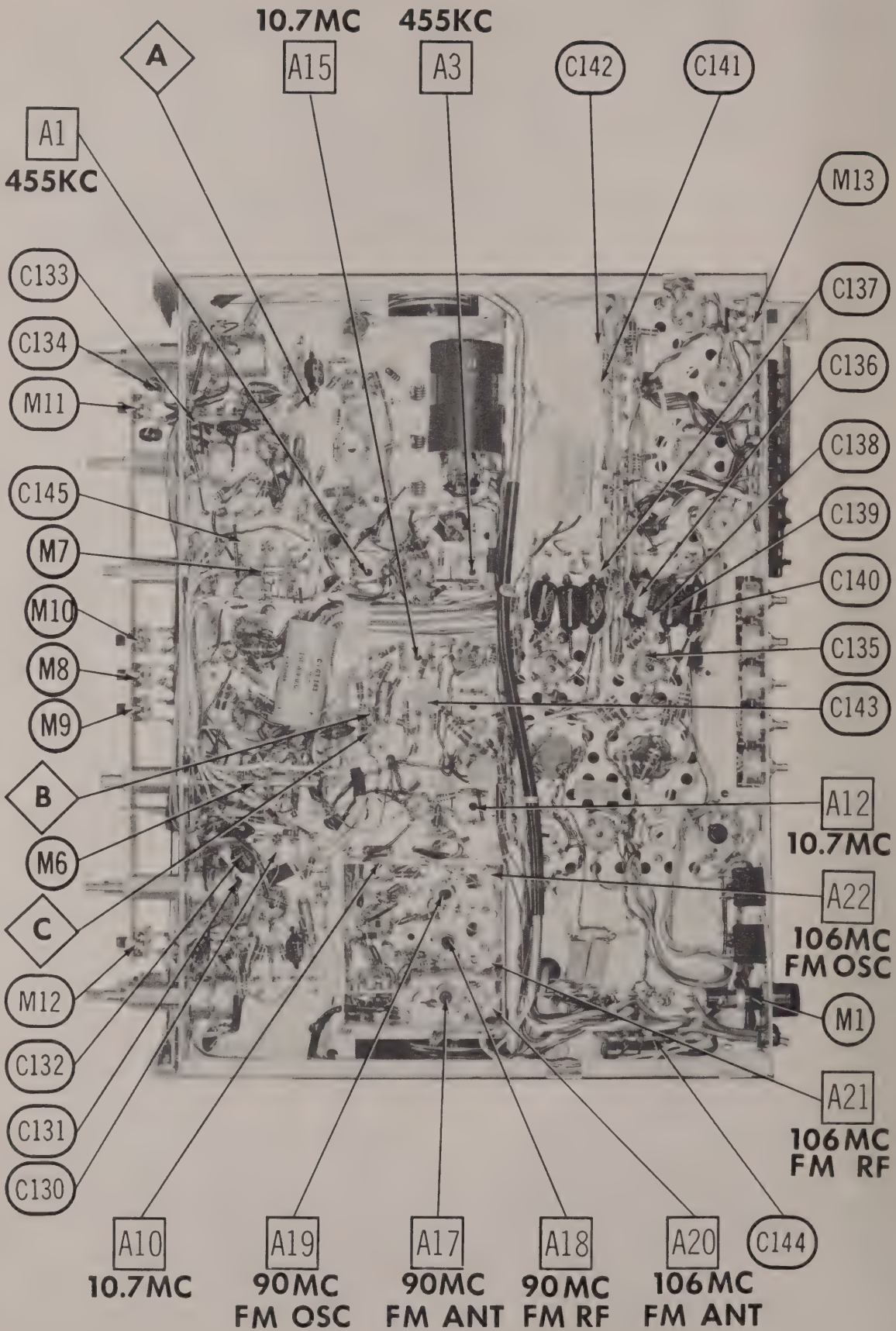


CHASSIS BOTTOM VIEW
ALIGN., CAPACITOR (C130-C142), & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A6, A10 thru A14....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A15, thru A19.....	GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545
A7, A8, A9.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A20, A21, A22.....	GENERAL CEMENT #8271, 8273, 8275, 8276, 8721, 8722, 9150, 9298, 5003 WALSCO #2516, 2519

AM ALIGNMENT — SELECTOR IN AM POSITION

AM Bandwidth set to SHARP.
Short point (A) to chassis. Remove short when AM alignment is completed.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ Mod.)	(AM) Point of non-interference	AC probe to channel "A" RCRDR output. Low side to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	455KC (30KC Swp)	"	Use Scope. Vert. amp. to channel "A" RCRDR output. Low side to chassis.		Switch bandwidth to broad. Retouch A3 SLIGHTLY for symmetrical response. Switch bandwidth back to sharp.
3.	High side thru 220mmf to AM antenna terminal #3. (Disconnect link between terminals 1 and 2.)	600KC (400∿ Mod.)	600KC	AC probe to channel "A" RCRDR output. Common to chassis.	A5, A6	Adjust for maximum deflection.
4.	"	1400KC	1400KC	"	A7, A8, A9	Adjust for maximum deflection. Repeat Steps 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side to ungrounded tube shield floating over FM Mixer-Osc. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A10, A11, A12, A13, A14, A15	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (C). Common to point (D).	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side to ungrounded tube shield floating over FM Mixer-Osc. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point on non-interference.	Vert. Amp. to point (B). Low side to chassis.	A10, A11, A12, A13, A14, A15	Disconnect Stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 Reconnect C4.
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A16	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A15 for maximum amplitude and straightness of crossover lines.

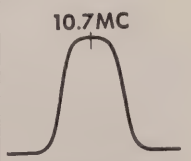
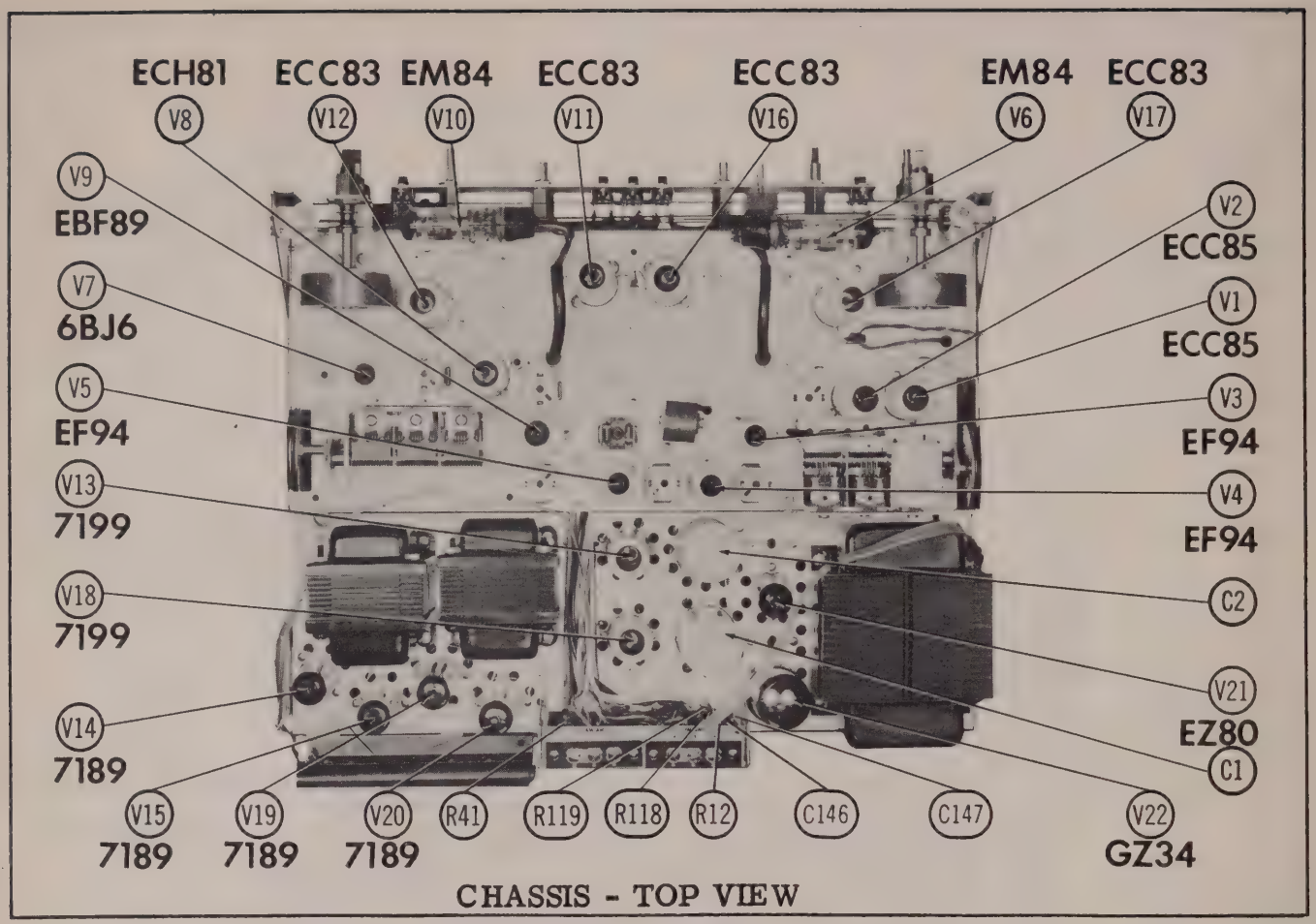


FIG. 1

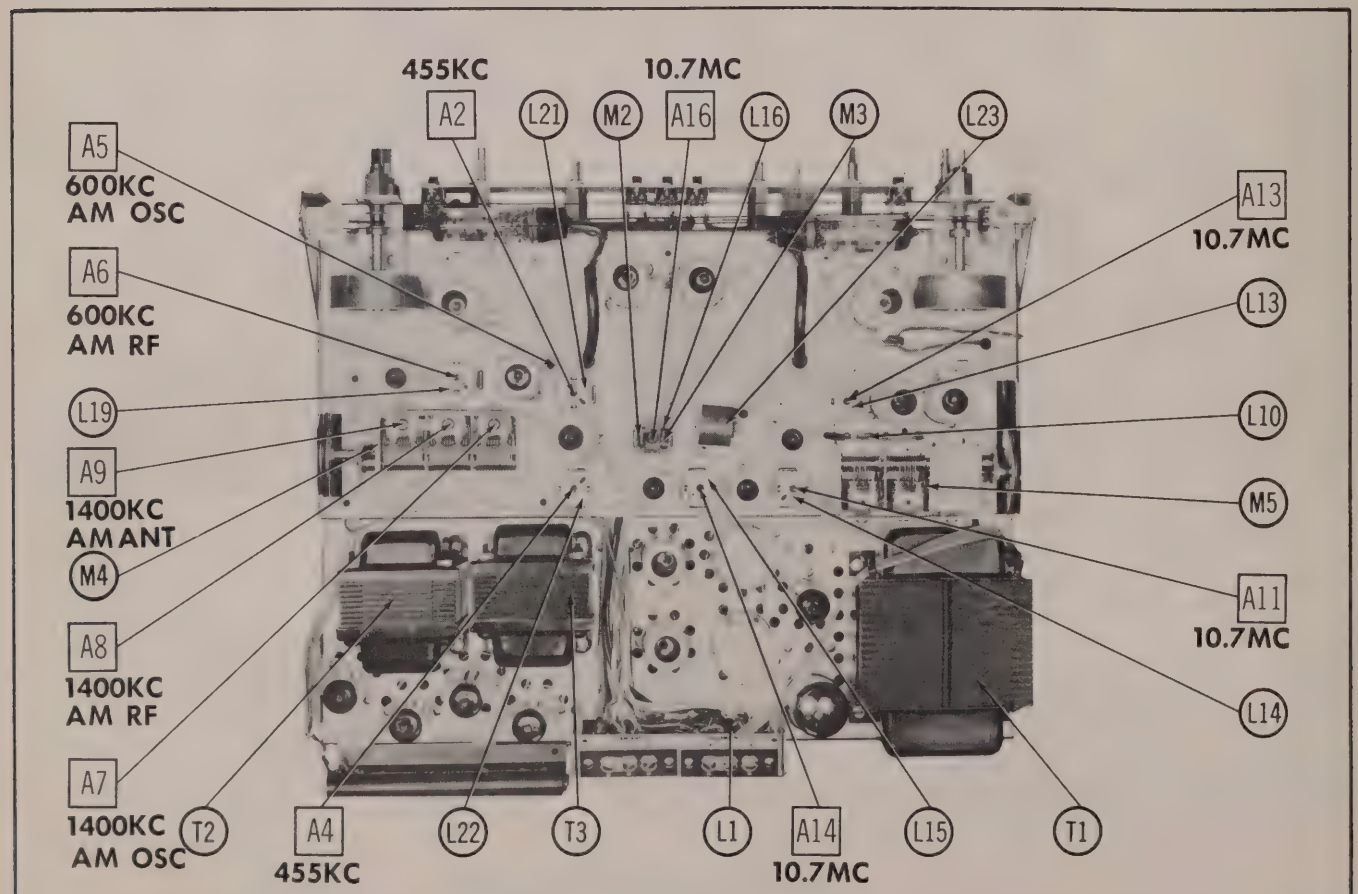
FIG. 2

FM RF ALIGNMENT — SELECTOR IN FM POSITION

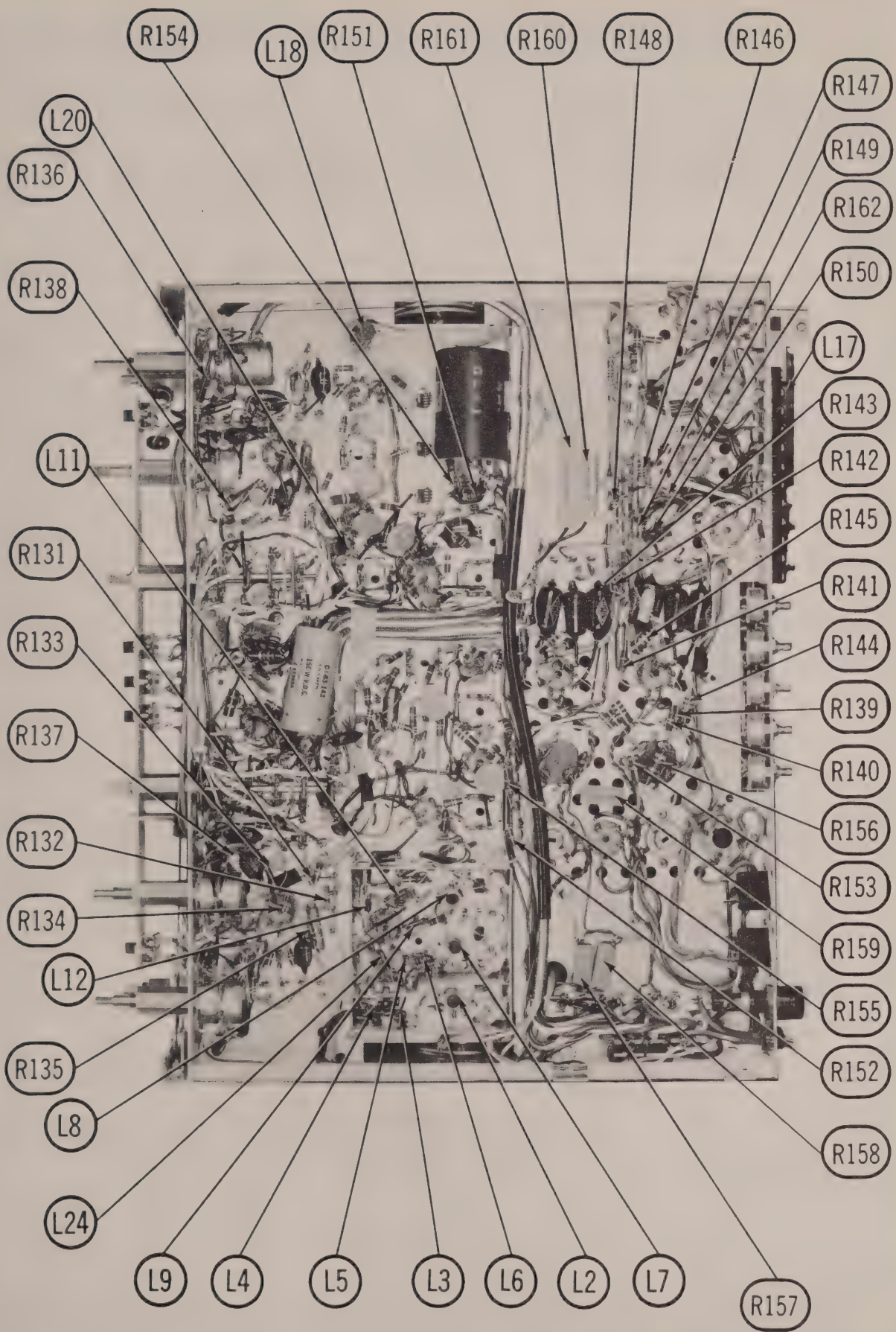
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals 5 & 6 with 120Ω in each lead.	90MC	(FM) 90MC	DC probe to point (B). Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
8.	"	106MC	106MC	"	A20, A21, A22,	Adjust for maximum deflection. Repeat Steps 7 and 8.



CHASSIS - TOP VIEW



CHASSIS - TOP VIEW



CHASSIS BOTTOM VIEW - INDUCTOR & RESISTOR (R131-R162) IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.	ECC85 (6AQ8) *	V13	Chanael A AF Amp. - Phase Inverter	7199
V2	FM Mixer-Osc.	ECC85 (6AQ8) *	V14	Channel A Output	7189
V3	1st FM IF Amp.	EF94 (6AU6) *	V15	Channel A Output	7189
V4	2nd FM IF Amp.	EF94 (6AU6) *	V16	Channel B Preamp.	ECC83 (12AX7, 7025)*
V5	3rd FM IF Amp.	EF94 (6AU6) *	V17	Channel B AF Amp.	ECC83 (12AX7, 7025)*
V6	FM Tuning Indicator	EM84 (6FG6) *	V18	Channel B AF Amp. - Phase Inverter	7199
V7	AM RF Amp.	6BJ6	V19	Channel B Output	7189
V8	AM Mixer-Osc.	ECH81 (6AJ8) *	V20	Channel B Output	7189
V9	AM IF Amp. -Det-AVC.	EBF89	V21	Rectifier	EZ80 (6V4) *
V10	AM Tuning Indicator	EM84 (6FG6) *	V22	Rectifier	GZ34 (5AR4) *
V11	Channel A Preamp.	ECC83 (12AX7, 7025)*			
V12	Channel A AF Amp.	ECC83 (12AX7, 7025)*			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	C50180-2	PWH4-58-65	CO344	FP376.9	TMT-39	TVL-3786	
B	■40	350			BR2035	TC65	TD-20-350	TVA-1608	
C	▲20	200							
C	20	200							
C2A	▲40	350	C670-125	AFH3-44	CO870	FP327.89	TMT-181	TVLS-3561.4*	
B	■40	250			BR4025				
C	▲40	250							
C3A	■30	300	C50180-1	AFH4-06	D0020	FP444.6	TMQ-14	TVLS-4563.5*	
B	▲10	200							
C	▲30	300							
D	10	200							
C4	8	50	C629-138	PRS1405	NLW8-100	TT150X8	ML8-50	TE-1303.3	
C5	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	ML30-6	TE-1091	
C6	25	6	C639-114	XPP-6025	NLW 25-6	TT6X25	ML30-6	TE-1091	
C7	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	ML30-6	TE-1091	
C8	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	ML30-6	TE-1091	
C9	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	ML30-6	TE-1091	
C10	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	ML30-6	TE-1091	
C11	100	150	C663-143	PRS1510	BR10015	TC493	TD-100-150	TVA-1420	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	8 NPO .5mmf		NPO-SI 8.2		C10V8C			10TCC-V82
C13		#C662-123						
C14	100 N1500 1000V 10%	#C50070-6				*		
C15	100 N1500 1000V 10%	#C50070-6				*		
C16	1000		EF-001	MFT-1000		CCF-102	CT280A	
C17	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C18	1000		EF-001	MFT-1000		CCF-102	CT280A	
C19	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C20	1000		EF-001	MFT-1000		CCF-102	CT280A	
C21	8 NPO .5mmf	(5mmf) ♦	NPO-SI 8.2		C10V8C			10TCC-V82
C22		#C662-123						
C23	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C24	100 N1500 1000V 5%	#C50070-19				*		
C25	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C26	5 NPO 5%	Note 1	NPO-SI 5	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C27	24 N150 1000V 5%	#C50070-8				*		
C28	47 N750 1000V 10%		N750-DI 47		C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C29	5 N150 .5mmf	#CC20PJ050D5				*		10TCP-V50
C30	5 N220 .5mmf	#CC20RH050D5				*		

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C31		#CC662-123						
C32	100 N1500 1000V 10%	#C50070-6				*		
C33	100 N1500 1000V 10%	#C50070-6				*		
C34	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C35	1000		EF-001	MFT-1000		CCF-102	CT280A	
C36	1000		EF-001	MFT-1000		CCF-102	CT280A	
C37	1000		EF-001	MFT-1000		CCF-102	CT280A	
C38	1000		EF-001	MFT-1000		CCF-102	CT280A	
C39	2700 1000V 10%		DI-2700			CCD-272		10TS-D27
C40	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C41	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C42	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C43	2700 1000V 10%		DI-2700			CCD-272		10TS-D27
C44	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C45	2700 1000V 10%		DI-2700			CCD-272		10TS-D27
C46	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C47	5000 1000V	(1000mmf) ♦	BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C49	330 1000V 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C50	330 1000V 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C51	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C52	330 1000V 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C53	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C54	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C55	24 N150 1000V 5%	#C50070-8				*		10TCP-Q22
C56	8 NPO .5mmf		NPO-SI 8.2		C10V8C			10TCC-V82
C57	100 N1500 1000V 10%	#C50070-6				*		
C58	.047 250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C59	18 N470 1000V 10%	#C50070-13				*		
C60	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C61	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C62	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C63	.68	#C50077-6N	NPO-SI .68	TCZ-R68				
C64	10 NPO .5mmf		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-V50
C65	100 N1500 1000V 10%	#C50070-6				*		
C66	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C67	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C68	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C69	100 N1500 1000V 10%	#C50070-6				*		
C70	10 NPO 1000V 10%				C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C71	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C72	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C73	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C74	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C75	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C76	220 1000V 10%			DD-221	L10T22	CCD-221	GP322	10TS-T22
C77	10 NPO 1000V 10%				C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C78	.047 250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C79	820 5%		1469-00082		1R5T82	CM-20-821J		MS-382
C80	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C81	560 1000V 10%		DI-560	DD-561		CCD-561	GP356	10TS-T56
C82	1800 1000V 10%		DI-1800	DD-182		CCD-182	GP218	10TS-D18
C83	390 1000V 10%		DI-390	DD-391		CCD-391	GP339	10TS-T39
C84	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C85	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C86	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C87	16 N75 1000V 10%	#C50070-21				*		
C88	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C89	220 1000V 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C90	3300 1000V 10%		DI-3300			CCD-332	JL-233	10TS-D33
C91	82 N1500 1000V 10%	#C50070-7				*		
C92	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C93	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C94	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C95	47 N750 1000V 10%				C10Q47U	CCTN-447	CN7-447	10TCU-Q47
C96	220 1000V 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C97	100 N1500 1000V 10%	#C50070-6				*		
C98	100 N1500 1000V 10%	#C50070-6				*		
C99	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C100	.002 200V		P288N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C101	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C102	68 N2200 1000V 10%	#C50070-12				*		

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C103	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C104	47 N750 1000V 10%				C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C105	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C106	470 1000V 10%		DI-470	DD-471		CCD-471	GP347	10TS-T47
C107	15 N75 1000V 10%	#C50070-18				*		
C108	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C109	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C110	390 1000V 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C111	390 1000V 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C112	560 1000V 10%		DI-560	DD-561		CCD-561	GP356	10TS-T56
C113	1800 1000V 10%		DI-1800	DD-182		CCD-182	GP218	10TS-D18
C114	390 1000V 10%		DI-390	DD-391		CCD-391	GP339	10TS-T39
C115	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C116	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C117	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C118	16 N75 1000V 10%	#C50070-21				*		
C119	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C120	220 1000V 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C121	3300 1000V 10%		DI-3300			CCD-332	JL-233	10TS-D33
C122	68 N2200 1000V 10%	#C50070-12				*		
C123	1000 1000V 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C124	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C125	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C126	47 N750 10%				C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C127	220 1000V 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C128	100 N1500 1000V 10%	#C50070-6				*		
C129	100 N1500 1000V 10%	#C50070-6				*		
C130	1000 1000V		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C131	.002 200V		P288N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C132	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C133	68 N2200 1000V 10%	#C50070-12				*		
C134	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C135	47 N750 1000V 10%				C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C136	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C137	470 1000V 10%		DI-470	DD-471		CCD-471	GP347	10TS-T47
C138	15 N75 1000V 10%	#C50070-18				*		
C139	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C140	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C141	390 1000V 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C142	390 1000V 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C143	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C144	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C145	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C146	100 N1500 1000V					*		
C147	100 N1500 1000V					*		

Note 1. Not used in some versions.
Fisher Part Number.
♦ Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K 100Ω Tap	½	R50160-17	BT-66				Volume, Channel B
B	500K 100Ω Tap	½		STR-66				Volume, Channel A
C	Switch			KR-2				Power Off-On
R2A	250K	½	R50160-18	B-50	AD47-250K-S	QJ1-130		Balance, Channel B
B	250K	½		STR-50	Not Req.	MJ1-130	■ UE4062	Balance, Channel A
C	Shaft			Not Req.	FS-3	Not Req.		
R3A	1meg 100K Tap	½	R50160-19				F1-52 *	Treble, Channel B
B	1meg 100K Tap	½				† QJ-1140R	R2-52 *	Treble, Channel A
R4A	1meg 100K Tap	½	R50160-19				F1-52 *	Bass, Channel B
B	1meg 100K Tap	½				† QJ-1140R	R2-52 *	Bass, Channel A

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R5	250K	½	R50160-3	JL-254				Input Level, Phono A
R6	250K	½	R50160-3	JL-254				Input Level, Phono B
R7	250K	½	R50160-3	JL-254				Input Level, MPXA
R8	250K	½	R50160-3	JL-254				Input Level, MPXB
R9	250K	½	R50160-3	JL-254				Input Level, AM
R10	500Ω	2(WW)	R516-128					Hum Adjust. Channel A
R11	500Ω	2(WW)	R516-128					Hum Adjust. Channel B

† "Concentrikit" Equivalent: K-6 Kit with Base Elements & Shafts: B18-137X, P4-121 (Panel). (Not available as a factory assembled unit.) B18-137X, R1-200 (Rear).
■ "STA-LOC" Equivalent: FA254L, RU254L, CS3500.
* Use when taps are not connected.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R12	270Ω	
R13	100K	
R14	330K	
R15	330K	
R16	1meg	
R17	470K	
R18	2200Ω	
R19	1000Ω	
R20	1000Ω 1W	
R21	22Ω	
R22	1000Ω	
R23	68K	
R24	150Ω	
R25	3.3meg	
R26	1000Ω	
R27	47K 1W	
R28	150Ω	
R29	33K	
R30	1000Ω	
R31	82K	
R32	270Ω	
R33	68K	
R34	1500Ω	
R35	15K	
R36	1000Ω	
R37	10meg	
R38	390K	
R39	330K	
R40	470K	
R41	1000Ω	
R42	4.7Ω	
R43	2.2meg	
R44	2.2meg	
R45	1000Ω	
R46	47K	
R47	100Ω	
R48	4.7Ω	
R49	820K	
R50	47K	
R51	33K 1W	
R52	150Ω	
R53	22K 1W	
R54	1000Ω	
R55	270Ω	
R56	270Ω	
R57	1000Ω	
R58	47K	
R59	47K	
R60	180Ω	
R61	100K	
R62	2.2meg	

ITEM No.	RATING	REMARKS
R63	2.2meg	
R64	470K	
R65	3.3meg	
R66	10K	
R67	100K	
R68	330K 1W	
R69	2700Ω 1W	
R70	10Ω	
R71	10meg	
R72	220K	
R73	120K	
R74	270K	
R75	2.2meg	
R76	2.2meg	
R77	3.3meg	
R78	15meg	
R79	100K	
R80	1200Ω	
R81	220K	
R82	18K	
R83	39K	
R84	470K	
R85	4.7meg	
R86	100K	
R87	100K	
R88	10meg	
R89	2.2meg	
R90	220K	
R91	2200Ω	
R92	10meg	
R93	47K	
R94	22K	
R95	220K	
R96	820K	
R97	1500Ω	
R98	100Ω	
R99	6800Ω	
R100	33K 1W	
R101	33K 1W	
R102	680K	
R103	1000Ω	
R104	680K	
R105	10K	
R106	1000Ω	
R107	15K	
R108	10K	
R109	100K	
R110	330K 1W	
R111	2700Ω 1W	
R112	10Ω	
R113	10meg	

ITEM No.	RATING	REMARKS
R114	220K	
R115	120K	
R116	270K	
R117	2.2meg	
R118	100K	
R119	100K	
R120	2.2meg	
R121	15meg	
R122	3.3meg	
R123	100K	
R124	1200Ω	
R125	220K	
R126	18K	
R127	39K	
R128	470K	
R129	4.7meg	
R130	100K	
R131	100K	
R132	10meg	
R133	2.2meg	
R134	220K	
R135	2200Ω	
R136	22K	
R137	10meg	
R138	47K	
R139	220K	
R140	820K	
R141	1500Ω	
R142	100Ω	
R143	6800Ω	
R144	33K 1W	
R145	33K 1W	
R146	680K	
R147	1000Ω	
R148	680K	
R149	10K	
R150	1000Ω	
R151	47K	
R152	4700Ω	
R153	4700Ω 1W	
R154	47K	
R155	4700Ω	
R156	4700Ω 1W	
R157	220Ω 5W	
R158	220Ω 5W	
R159	50Ω 5W	
R160	2200Ω 7W	
R161	140Ω 10W	#R720-177
R162	15K	

Fisher Part No.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		FISHER PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	L50066-8						3.3uh
L2	FM Ant. Trans.	L726-124						
L3	RF Choke	L50066-2	19-1000	19-1000	BC-561	4602		luh
L4	RF Choke	L50066-19						.56uh
L5	RF Choke	L50066-19						.56uh
L6	RF Choke	L629-180						①
L7	FM RF Coil	L726-126						
L8	FM Osc. Coil	L726-125						
L9	RF Choke	L50066-2	19-1000	19-1000	BC-561	4602		luh
L10	RF Choke	L50066-3	19-1000	19-1000	BC-561	4602		1.2uh
L11	Cathode Choke	L50066-19						.56uh
L12	RF Choke	L50066-2	19-1000	19-1000	BC-561	4602		luh
L13	1st FM IF	ZZ662-117	16-3490	16-3490		1463-PC		
L14	2nd FM IF	ZZ2987	16-3487	16-3487	FM-254	1463		
L15	3rd FM IF	L670-145						
L16	Ratio Detector	ZZ592-170						
L17	AM Ant. Coil	L721-139						
L18	Loopstick	L721-136			BC-419			
L19	AM RF Trans.	L556-125						
L20	AM Osc. Coil	L50210-21						
L21	1st AM IF	ZZ50210-1						
L22	2nd AM IF	ZZ2984	16-6758	16-6758	BC-353	12-C2	RF-2	
L23	10KC Filter	L644-120						
L24	Filter Choke	L50066-3	19-1000	19-1000	BC-561	4602		1.2uh

① 5 Turns of wire on 100Ω resistor.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.4A	720VCT @.180A	420VCT @.060A	T720-115						
	SEC. 3	SEC. 4	SEC. 5							
	5V@3A SEC. 6 6.3V@ 2.8A	6.3V @ 3A	6.3V @ 2.8A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω CT	16Ω tap @ 8Ω, 4Ω	T720-116				A-3304①			
T3	7000Ω CT	16Ω tap @ 8Ω, 4Ω	T720-116				A-3304①			

① Drill new mounting hole. Use 7000Ω primary.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3 2/10A 125V	F3319	X1036	31303.2 (3AG 3 2/10A 125V)	342001	MDX 3 2/10	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		FISHER PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N541		1N60	1N295	1N295	Ratio Detector (Clip-in)
M3	1N541		1N60	1N295	1N295	Ratio Detector (Clip-in)

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M4	Tuning Cap.	C684-127	AM, 3 Gang (Ant. 10-505mmf, RF 10-503mmf, Osc. 7-138mmf)
M5	Tuning Cap.	C726-116	FM, 2 Gang
M6	Switch	S720-154	Selector (Rotary Wafer Type)
M7	Switch	S720-151	Monaural-Stereo (Rotary Wafer Type)
M8	Switch	S50200-2	AM Sharp-AM Broad (DPDT, Slide Type)
M9	Switch	S50200-2	Lo Filter-Off (DPDT, Slide Type)
M10	Switch	S50200-2	Hi Filter-Off (DPDT, Slide Type)
M11	Switch	S50200-2	Loudness Contour Off (DPDT, Slide Type)
M12	Switch	S50200-2	Tape-Monitor-Playback (DPDT, Slide Type)
M13	Switch	S50200-2	Phase Normal-Reverse (DPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E50133-1	Tuning
Knob	E50154-1	Volume, Balance
Knob	E50153-1	Bass, Treble,(Rear)
Knob	E50152	Bass, Treble, (Front)
Knob	E50133-2	Selector, Mono-Stereo
AM Dial Pointer	A720-159	
FM Dial Pointer	A720-158	
Dial Glass	N750-113	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE*
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GELOSO MODEL
G256/60

GELOSO MODEL
G256/60

GENERAL INFORMATION

Geloso Model G 256/60 Stenotape recorders feature push-button controls for Record, Rewind, Play, and Stop. This recorder records and plays back two tracks of material on standard 1/4-inch width recording tape, thus, doubling the playing time.

The Model G 256/60 has one tape speed -- 1 7/8 inches per second.

When both tracks and 102/N 1-mil acetate tape are used on a 3 1/4-inch reel, the playing time is 90 minutes. When 105/N 1/2-mil tape is used, the playing time is two hours.

This recorder operates on 110-117 volts, 60 cycles AC only.

Supplied by:

American Geloso Electronics, Inc.
312 Seventh Avenue
New York 1, New York

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CQ418

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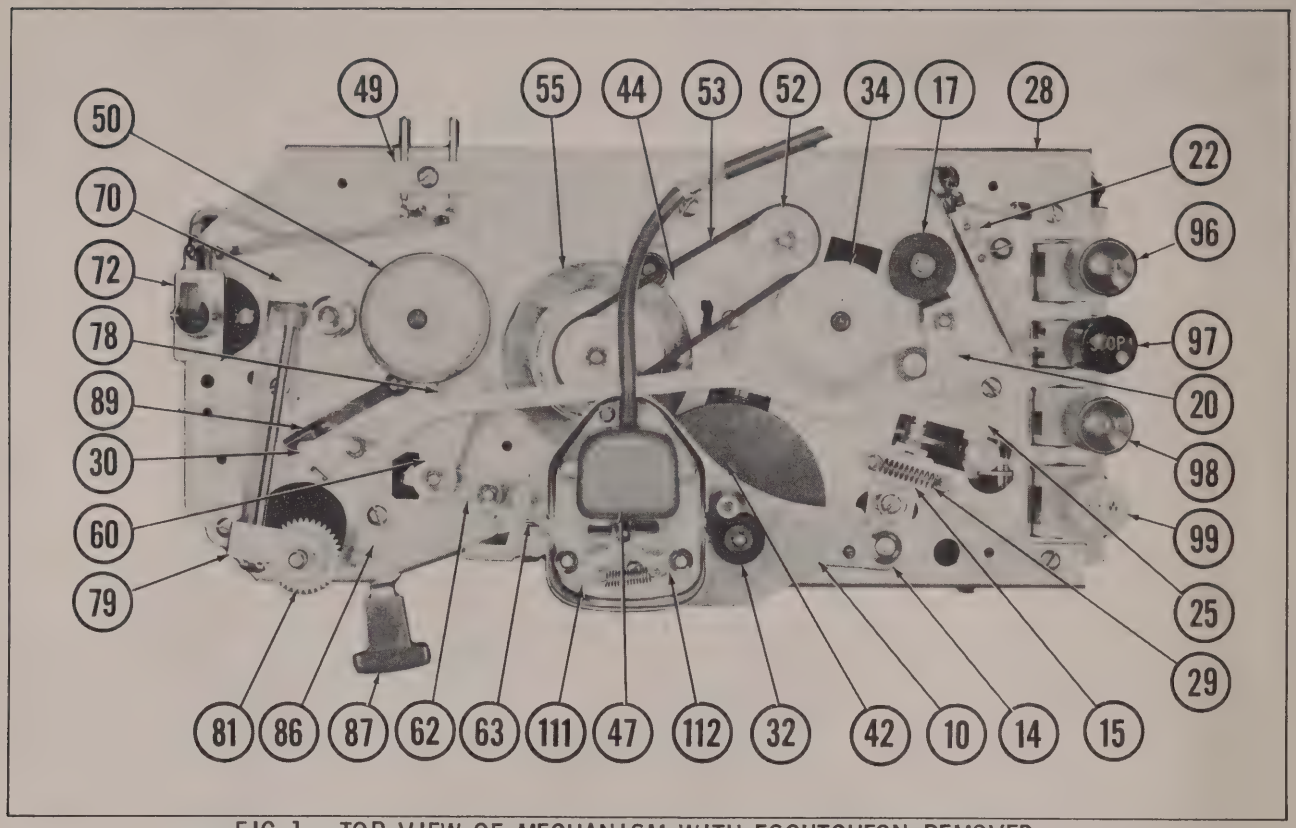


FIG.1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

PREPARING FOR OPERATION

1. Place the recorder so that the controls are accessible and at a convenient height.
2. Plug the power cord into the rear of the unit and into any AC outlet with the proper frequency and power requirements.
3. Open the dust cover.
4. The recorder is now ready for use. Before operating it, the operator should familiarize himself with the controls.

FUNCTION OF CONTROLS

On-Off

Moving this control toward the rear of the recorder turns the power on; toward the front, turns the power off.

Fast Forward

Moving this control to the left will rapidly advance the tape to any desired section in a few seconds.

Volume

Rotating this control clockwise will increase the volume; counterclockwise, will decrease the volume.

Rewind

Depressing this button will rapidly rewind the tape onto the feed reel.

Play Back

Depressing this button sets the tape in motion to play back the recording.

Stop

Depressing this button stops the tape.

Record

This push button must be depressed in order to make a recording.

Threading the Tape

1. Place a reel of tape on the left spindle (57) and an empty reel on the right spindle (45) making sure the reel slips completely into the guide ledges of the spindle.
2. Push the Fast Forward lever to the left.
3. Thread the tape into the slot of the recording head and between the two drive rollers.
4. Attach the tape to the empty reel on the right-hand side. Turn this reel counterclockwise two or three complete revolutions.

To Record From a Microphone

1. Insert the microphone plug into the Microphone Input jack.
2. Turn the recorder on by pushing the On-Off switch to On.
3. Thread the tape (see "Threading the Tape").
4. Bring the index line on the Volume control to the red dot. This is the average setting for the recording.
5. Set the tape counter to zero.
6. Holding the microphone six or eight inches from the mouth, depress the Record button, and start talking in a normal tone. If the indicator light flickers, the Volume control setting is correct. If the light does not flicker at all, the setting is too low. If the light blinks out, the setting is too high, or the operator is talking too loudly.

To Record From a Radio or Television Receiver

Recordings can be made from a radio or television receiver by placing the microphone near the speaker. However, this type of recording may not be satisfactory because the microphone may pick up other sounds, which will be recorded on the tape. A better quality recording can be made by using the Geloso No. 9014 Radio Pickup. Connect the leads of this unit to the speaker terminals of the radio or television receiver. Insert the plug of the connector into the Microphone jack on the front of the recorder. Then proceed as described under "To Record From a Microphone."

Dual-Track Recording

1. After the recorded tape has been wound onto the take-up reel, depress the Stop push button.
2. Remove the reels from the recorder. Turn the full reel over and place it on the left reel spindle. Place the empty reel on the right reel spindle.
3. Thread the tape (see "Threading the Tape"). Then proceed with the recording as described under "To Record From a Microphone.
4. After the second track has been recorded, the first track can now be played without rewinding the tape. (See Steps 5, 6 and 7.)
5. Place the full reel on the left reel spindle, and an empty reel on the right reel spindle.
6. Thread the tape (see "Threading the Tape"). Make sure the dull side of the tape faces the record head.
7. Set the controls as described in the following under "To Play a Recording."

To Play a Recording

1. Thread the tape (see "Threading the Tape").
2. Turn the On-Off switch to On. Allow sufficient time for the unit to warm up.
3. Depress the Play push button.
4. Adjust the Volume control to the desired listening level.

Fast Forward and Rewind

High-speed forward can be obtained by pushing the Fast Forward lever to the left. For fast rewind, depress the Rewind push button. These controls are used primarily for locating a desired portion of a recording in a few seconds.

Erasing Recorded Material

Recorded material is automatically erased when new material is recorded. Therefore, no special step is necessary when new recordings are made. However, a portion of a recording or an entire reel of tape can be erased, if desired, as follows:

1. Thread the tape (see "Threading the Tape").
2. Turn the unit on by moving the On-Off switch to On. Allow sufficient time for the unit to warm up.
3. Depress the Record button. The recorded material is now being erased. The process can be stopped at any time by depressing the Stop button.

NOTE: Only one track of recorded material is erased at a time. To erase the second track, reverse the reels and repeat the foregoing operation.

To Edit and Splice Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings to be edited should be limited to one track only.

1. The tape can be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements, etc., can be inserted between selections. Unused sections of tape can be spliced and re-used.

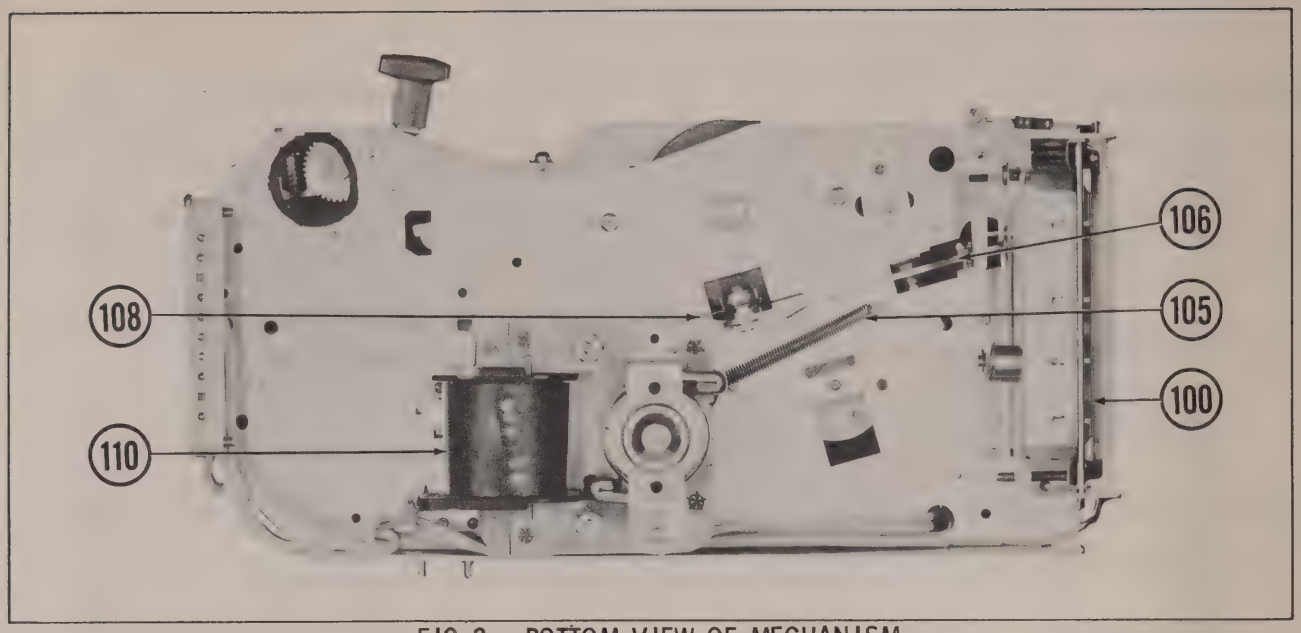


FIG. 2 BOTTOM VIEW OF MECHANISM

2. For best results, overlap the broken ends, and cut them at a 45° angle. Join the ends with splicing tape on the glossy side, and trim off any excess width.

Using an External Speaker

An external speaker can be connected to the tape recorder by using External Speaker Cord No. 353. Plug the cord into the Output jack on the rear of the unit, and connect the clips to the external speaker coil.

DISASSEMBLY

To Remove Tape Recorder From Cabinet

1. Remove index pointer (67).
2. Remove the three screws from top grill (6). Remove the grill.
3. Remove the five screws holding top deck (5) to the tape transport.
4. Remove the five screws from the bottom of the case.
5. Lift top deck (5), front half of case (101), and rear half of case (102) from the tape recorder.
6. Lift the tape recorder from the bottom of the case.
7. To reassemble, reverse the foregoing procedure.

To Remove the Amplifier From the Tape Transport

1. Remove the two metal screws holding the tape transport to the power transformer.
2. Remove the two screws, below the push-button assembly, holding the tape transport to the amplifier chassis.
3. Unplug the speaker and head connections.
4. Carefully lift the tape transport from the amplifier, in order to unplug it from the multiple connector.
5. To reassemble, reverse the foregoing procedure.

ADJUSTMENTS

Flywheel

1. Loosen flywheel bearing locking nut (93).
2. Loosen or tighten flywheel bearing screw (92).
3. Retighten nut (93).

Clutch

1. Place an empty reel with a hinged lock at the

outside edge on the right reel spindle.

2. The reel traction should be between 4.8 and 7.2 grams.
3. Should the traction need adjusting, remove reel boffin (34).
4. Remove spring washer (35) and washers (37) and (38).
5. Clean the cord on cork friction disc (40) thoroughly. Moisten it with a drop of oil, spreading the oil over the entire surface of the cork.
6. Reassemble the clutch, and recheck the traction.

Fast Forward

1. Place an empty reel with a hinged lock at the outside edge on the right reel spindle.
2. Move the Fast Forward lever to the left.
3. The traction should read 15 grams on a gram scale.
4. If the traction is less than 15 grams, check rapid advance wheel (17) to see that it runs freely. If it does not, clean it with alcohol.
5. Make sure cork friction disc (40) and friction disc (36) are securely friction-joined.

Rewind Stop

1. Depress the Stop button.
2. Loosen screw (12) to permit tape control lever (14) to move freely.
3. There must be a clearance of 1/64 inch between rubber idler wheel (32) and the capstan.
4. After securing the required clearance (see Step 3), tighten screw (12).

Tape Alignment

1. Thread the tape (see "Threading the Tape").
2. Depress the Play push button to set the tape in motion.
3. Pull record-play head pressure-pad arm (112) away from the tape.
4. If the tape rises on the take-up reel, bend take-up wheel shaft (45) toward the flywheel. If the tape falls, bend supply wheel shaft (57) toward the motor pivot.

Head Alignment

1. Connect a voltmeter to the output jack.
2. Thread a prerecorded 5,000-cycle note tape onto the recorder.
3. Place the recorder in the Playback mode.
4. Set the Volume control in the middle.
5. Adjust screw (47A) for a maximum reading.

NOTE: If the speaker is disconnected, connect a 3.2-ohm, 2-watt resistor between the output jack and the voltmeter.

CAUTION: Never clean the magnetic head with carbon tetrachloride.

CLEANING

Recording head (47), rubber idler wheel (32), and the capstan shaft may accumulate tape coating residue, which is worn off the tape as it passes these parts. Clean them with a soft cloth and alcohol.

LUBRICATION

Apply one drop of oil to the following parts if they have been replaced or removed for repair:

Geared tape counter assembly (79).

Geared counter wheel (70).

Locknut of reverse wheel (50).

Drive wheel (55).

Disc of rapid advance wheel (17).

Locknut of cork friction disc (40).

Ring of gear of rapid advance wheel (17).

Ring of rubber idler wheel-capstan (32).

Reverse wheel lever (60).

Rapid advance activating lever (86).

Lever of rapid advance wheel shaft assembly (20).

Tape control lever (14).

Lubricate the following with a thin film of grease:

Drive wheel support (44).

Drive gear bearing (part of Item 44).

Pivot and paper washer of nylon reverse idler wheel (78).

Suspension spring for external fast-forward control on hook.

Pivot welded to flywheel (42) (in pivot grooves).

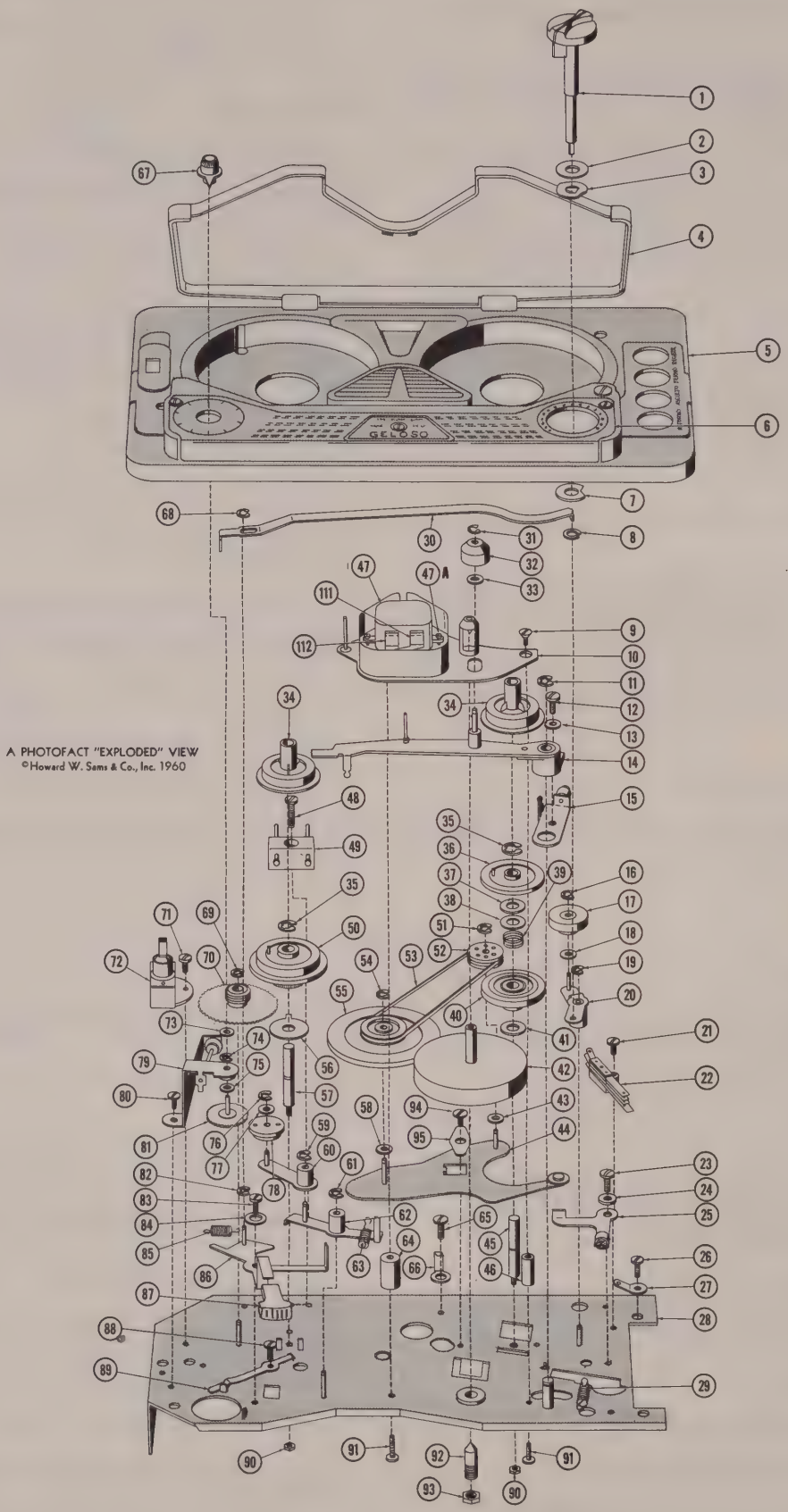
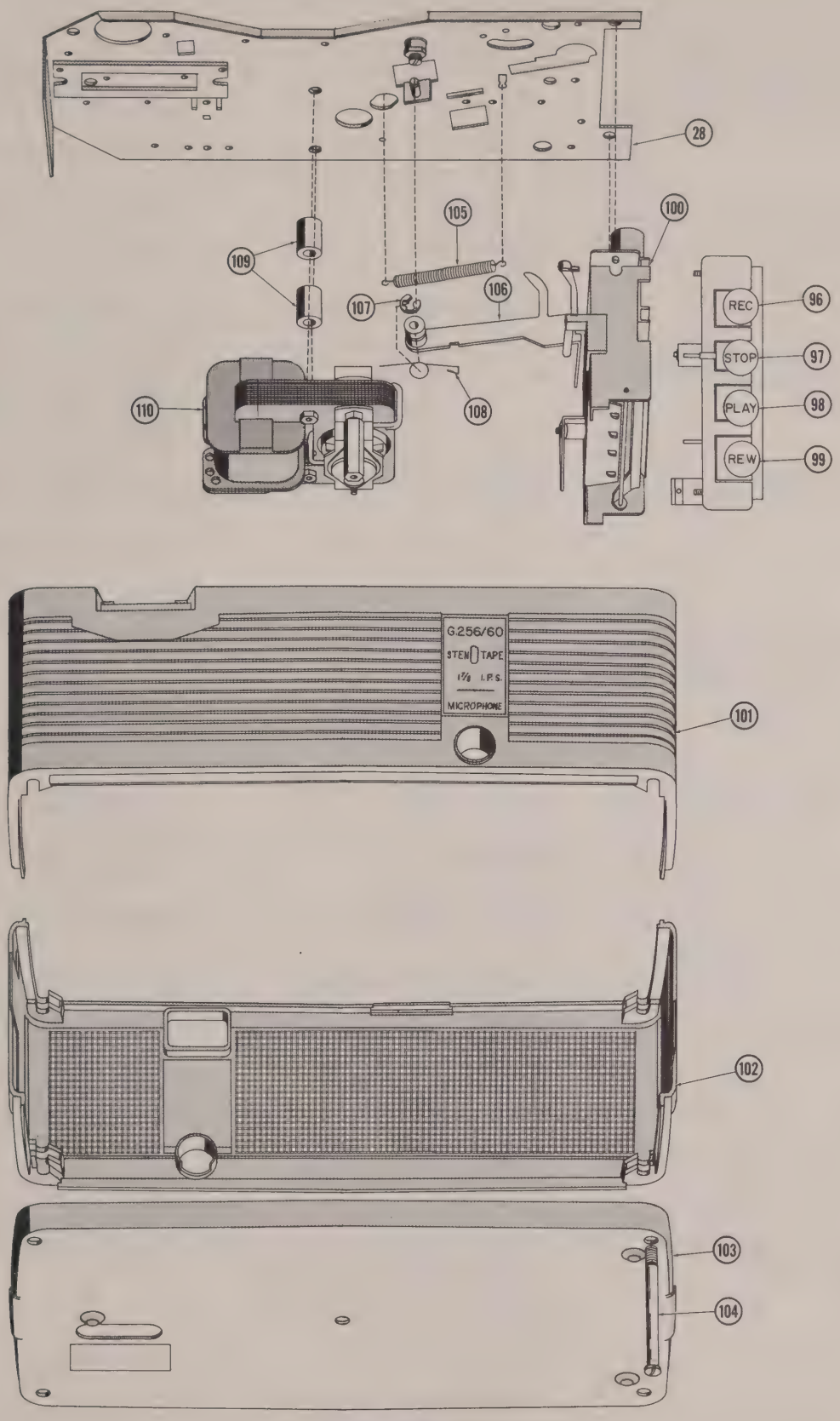


FIG.3A EXPLODED VIEW OF PARTS ABOVE UPPER CHASSIS



A PHOTOFACT "EXPLODED" VIEW
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FIG. 3B EXPLODED VIEW OF PARTS BELOW UPPER CHASSIS

TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Reels do not turn in Play or Record. Background noise in Play. Indicator light on.	1. Motor rotor stuck.	1. Push rotor counterclockwise (when viewed from top) to start motor. 2. Check motor bearings. 3. Check AC connection to motor.
Low output.	1. Defective 12AX7 or EL95 tube. 2. Recording head misaligned.	1. Replace defective tube. 2. See "Head Alignment."
Reels turn, indicator flickers while recording, but unit will not play back.	1. Defective speaker or audio output transformer.	1. Connect auxiliary speaker to Output jack in order to bypass speaker in set; or check for continuity and shorts in transformer.
Does not record or play. Reels turn, and indicator lights.	1. Defective 12AX7 or EL95 tubes. 2. Head plug disconnected. 3. Head lead broken.	1. Replace defective tubes. 2. Reconnect head plug. 3. Repair broken lead.
Unit does not operate. Reels do not turn. No background speaker noise in Play. No indicator light.	1. Defective AC cord.	1. Replace AC cord.
Reels rewind only.	1. Broken drive belt (53).	1. Replace drive belt (53).
Hum in output.	1. Poor microphone shielding during a recording. 2. Noisy tape. 3. Shorted or leaky filter capacitor. 4. Weak selenium rectifier.	1. Check shield on microphone cable for proper connections. 2. Substitute another tape to compare. 3. Isolate, test, and replace the capacitor if necessary. 4. Replace the selenium rectifier.
Flywheel binds.	1. Flywheel bearing screw (92) too tight.	1. Loosen flywheel bearing locking nut (93) and adjust flywheel bearing screw (92) until the flywheel runs freely with no clearance. Tighten nut (93).
No rewind.	1. Spring (63) broken or disconnected.	1. Replace or reconnect spring (63).
No pressure against the tape in Play or Record.	1. Spring connected between erase-head pressure-pad arm (111) and record-play pressure-pad arm (112) broken or disconnected.	1. Replace or reconnect spring.

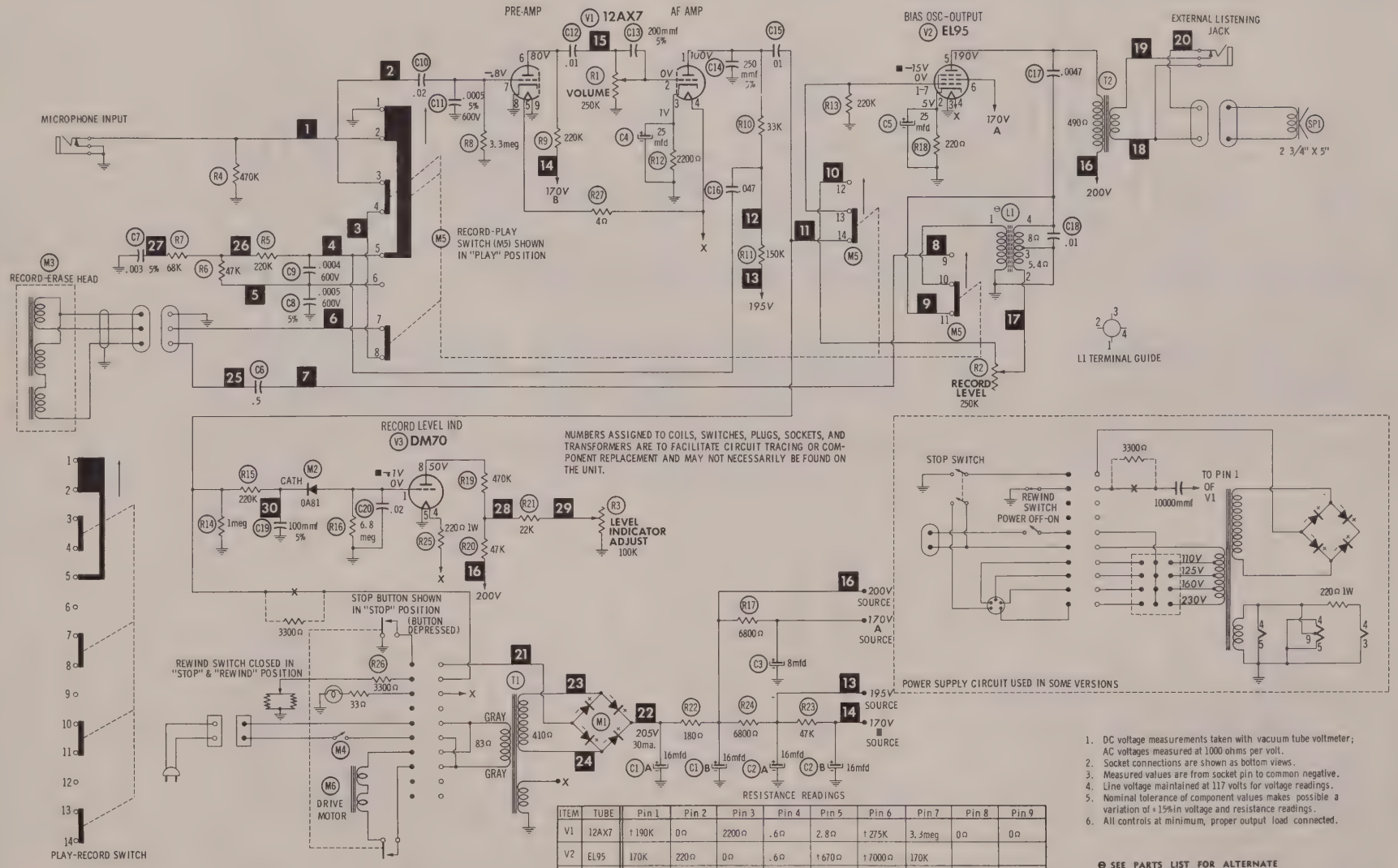
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	256/231	Volume Control Shaft
2	256/75	Washer
3	256/76	Spring Washer
4	256/12D	Dust Cover

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
5	256/12A	Top Deck
6	256/12E	Top Grill
7	256/46	Washer
8	256/9	"C" Locking Washer
9	256/138	Support Plate Screw
10	256/99	Flywheel-Record Head Support Plate
11	256/188	Spring Washer
12	256/216	Screw - 1/8 x 6
13	256/55	Washer
14	256/90	Tape Control Lever
15	256/89	Secondary Lever
16	256/187	Spring Washer
17	256/163	Rapid Advance Wheel
18	256/62	Washer
19		Spring Washer
20	256/93	Rapid Advance Wheel Shaft Ass'y.
21	256/216	Screw - 1/8 x 6
22	256/237	Switch - DPST
23	256/216	Screw - 1/8 x 6
24	256/148	Lockwasher
25	256/98	Drive-Belt Shifter Lever
26		Screw
27	256/7	Lug
28	256/87	Upper Chassis
29	256/175	Spring
30	256/92	Rapid Advance & Release Arm
31	256/187	Spring Washer
32	256/164	Rubber Idler Wheel-Capstan
33	256/62	Washer - 7 x 3 2 x 0.2
34	256/233	Reel Boffin
35	256/188	Spring Washer
36	256/108	Friction Disc
37	256/60	Washer - 11 x 5 2 x 0.3
38	256/195	Washer - 11 x 5 2 x 0.2
39	256/174	Spring
40	256/232	Cork Friction Disc
41	256/59	Washer - 11 x 5 2 x 0.5
42	256/191	Flywheel
43		Washer
44	256/97	Drive Wheel Support
45	256/131	Take-up Wheel Shaft
46	256/141	Spacer
47	256/320	Recording Head
47A	256/142	Recording-Head Alignment Screw
48		Screw
49	256/257	Power Supply Connector
50	256/118	Reverse Wheel
51		Spring Washer
52	256/112	Drive-Belt Shifter Wheel
53	256/165	Drive Belt
54	256/187	Spring Washer - 2.3
55	256/166	Drive Wheel - Motor
56	256/100	Reverse Wheel Washer
57	256/131	Supply Wheel Shaft
58	256/62	Washer - 7 x 3 2 x 0.2

Ref. No.	Part No.	Description
59	256/187	Spring Washer - 2.3
60	256/96	Reverse Wheel Lever
61	256/187	Spring Washer - 2.3
62	256/95	Lever
63	256/173	Spring
64	256/140	Spacer
65	256/218	Screw - 1/8 x 4
66	256/73	Record-Head Cable Hold-down
67	256/256	Index Pointer
68	256/187	Spring Washer - 2.3
69	256/187	Spring Washer - 2.3
70	256/206	Geared Counter Wheel
71	256/216	Screw - 1/8 x 6
72	256/10	SPST Switch
73		Washer (Part of Item 79)
74		Spring Washer (Part of Item 79)
75		Washer (Part of Item 79)
76	256/187	Spring Washer - 2.3
77		Washer
78	256/114	Nylon Reverse Idler Wheel
79	256/78	Geared Tape-Counter Ass'y.
80	256/218	Screw - 1/8 x 4
81		Timer Gear (Part of Item 79)
82	256/187	Spring Washer - 2.3
83	256/216	Screw - 1/8 x 6
84	256/156	Lockwasher
85	256/171	Spring
86	256/91	Rapid-Advance Activating Lever
87	256/238	Rapid Advance Knob
88	256/218	Screw - 1/8 x 4
89	256/88	Fast Forward Catch
90		Nut
91	256/216	Screw - 1/8 x 6
92	256/129	Flywheel Bearing Screw
93	256/139	Flywheel Bearing Locking Nut
94	256/216	Screw - 1/8 x 6
95	256/144	Lockwasher
96	256/245	Button - Red
97	256/246	Button - Black
98	256/247	Button - Green
99	256/248	Button - Yellow
100		Push-button Ass'y. Complete
101	256/12B	Front Half of Case
102	256/12C	Rear Half of Case
103	256/12G	Bottom of Case
104	256/217	Screw - 1/8 x 2
105	256/176	Spring
106	256/94	Remote-Control Return Lever
107	256/188	Spring Washer - 4
108	256/172	Spring
109	256/154	Upper Motor Spacers
110	256/18	Motor - 60 Cycles A.C.
111	256/308	Erase-Head Pressure-Pad Arm
112	256/307	Record-Play Head Pressure-Pad Arm



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†190K	0Ω	2200Ω	.6Ω	2.8Ω	†275K	3.3meg	0Ω	0Ω
V2	EL95	170K	220Ω	0Ω	.6Ω	†670Ω	†7000Ω	170K		
V3	DM70	400K	NC	NC	16Ω	0Ω	NC	NC	†515K	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
■ MEASURED IN "RECORD" POSITION.
† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

GELOSO MODEL G256/60

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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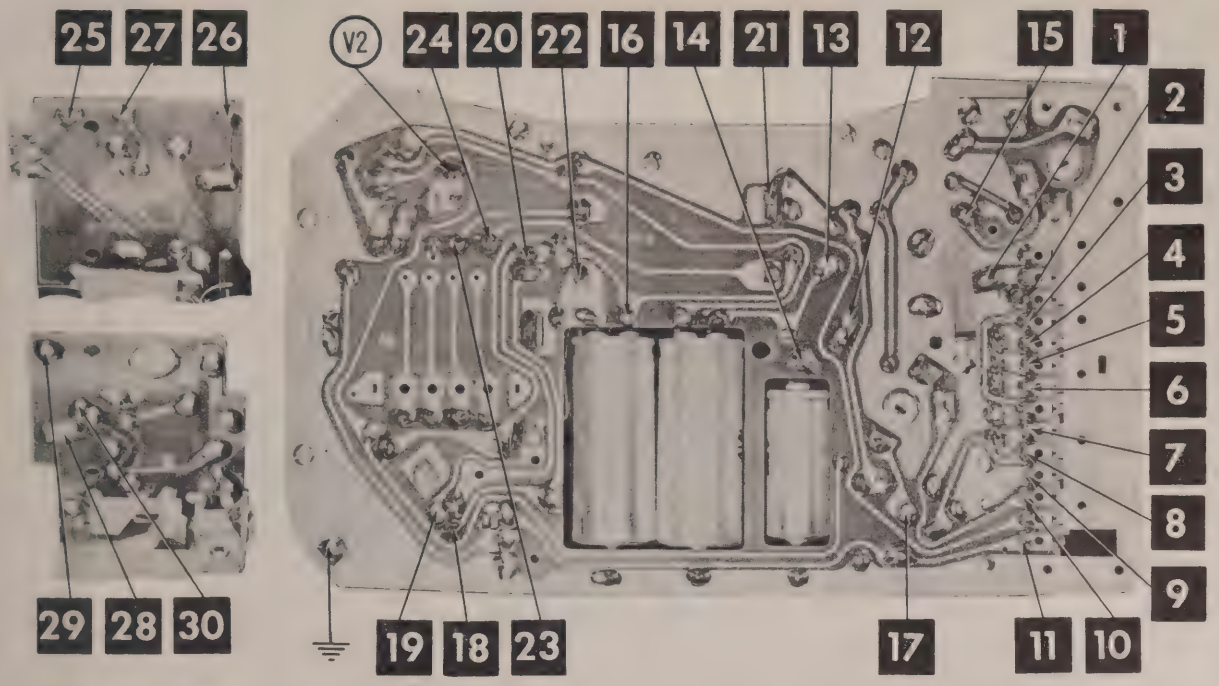
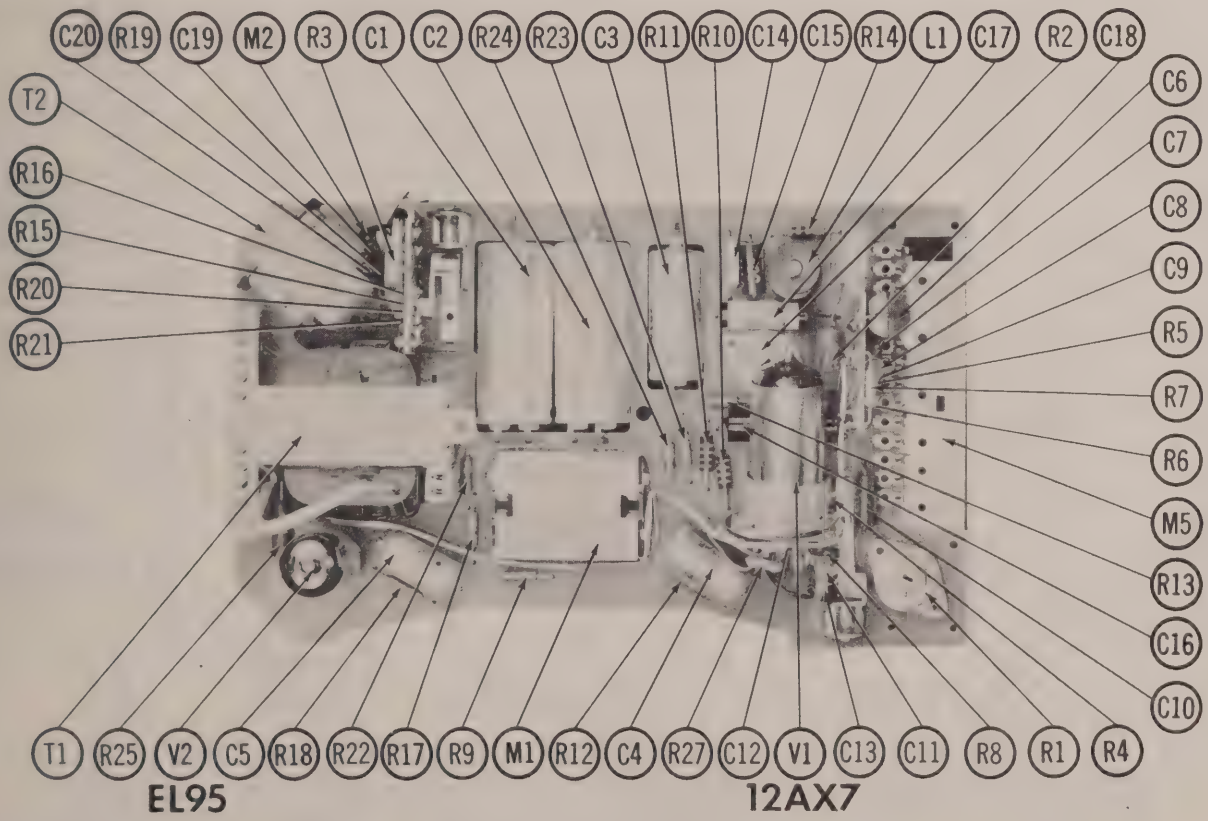


A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROW INDICATING V2
IS POINTING TO PIN 1



ELECT CHASSIS - TOP VIEW

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Preamplifier - AF Amplifier	12AX7/ECC83
V2	Bias Osc. - Output	EL95
V3	Record Level Indicator	DM70

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GELOSO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	16	350	256-4						
B	16	350							
C2A	16	350	256-4						
B	16	350							
C3	8	350	256-5						
C4	25	30	256-6	SRE50V25	BBR25-50	TC26	TD-25-50	TVA-1306	
C5	25	30	256-6	SRE50V25	BBR25-50	TC26	TD-25-50	TVA-1306	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.5 150V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C7	.003 5%		V84C6D3-5%		1R5D3	CM-20B-302J	MCE461	MS-23
C8	.0005 600V 5%				5R5T5	CM-20B-501J	MCE245	MS-35
C9	.0004 600V			D6-401	5R5T4	CM-20B-401M	MCE243	MS-34
C10	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C11	.0005 600V 5%				5R5T5	CM-20B-501J	MCE254	MS-35
C12	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C13	200 5%		1469-0002		22R5T2	CM-20B-201J	MCE237	MS-32
C14	250 5%		1469-00025		22R5T25	CM-20B-251J	MCE240	MS-325
C15	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C16	.047 250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C17	.0047 400V		P488N-0047	D6-472	CUB6Q47	6DP-1-472	GEM-6247	6TM-D47
C18	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C19	100 5%		1469-0001		22R5T1	CM-20B-101J	MCE235	MS-31
C20	.02 150V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GELOSO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	250K	½	256/268					Volume
R2	250K	½	256/269					Record Level
R3	100K	½	256/267					Level Indicator Adjust.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	470K	
R5	220K	
R6	47K	
R7	68K	
R8	3.3meg	
R9	220K	
R10	33K	
R11	150K	

ITEM No.	RATING	REMARKS
R12	2200Ω	
R13	220K	
R14	1meg	
R15	220K	
R16	6.8meg	
R17	6800Ω	
R18	220Ω	
R19	470K	

ITEM No.	RATING	REMARKS
R20	47K	
R21	22K	
R22	180Ω	
R23	47K	
R24	6800Ω	
R25	220Ω 1W	
R26	3300Ω	
R27	4Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA GELOSO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	17646 †						

† Alternate Part #256/3

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA GELOSO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	110V @ .12A 117V @ .14A	185V @ .030A	6.3V @ .8A	256/1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA GELOSO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7500Ω	3-4Ω	256/2							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA GELOSO PART No.	QUAM PART No.	NOTES
SP1	2 3/4" x 5"	PM	3-4Ω	256/19		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA GELOSO PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.030A	256/20 *					* Selenium Bridge Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA GELOSO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2	0A81	256/21	LD-178	1N60	1N60	Record Level Ind. Rect. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	GELOSO PART No.	NOTES
M3	Head	256/320	Record & Erase
M4	Switch	256/10	Power Off-On
M5	Switch		Play-Record (Slide Type)
M6	Motor	256/18	Drive

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

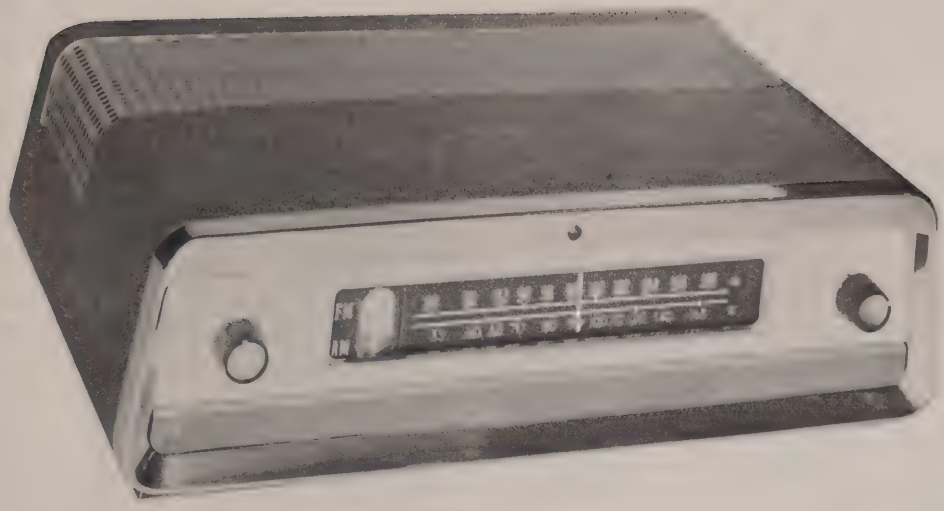
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

GROMMES MODEL 102GT

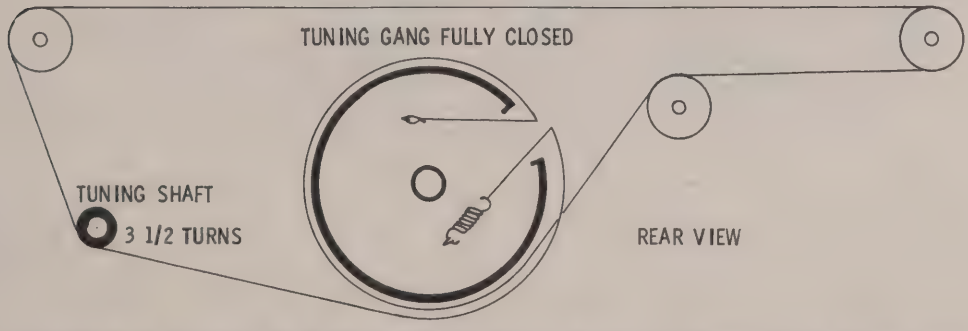
GROMMES MODEL 102GT



GROMMES MODEL 102GT

TRADE NAME	Grommes Model 102GT		
MANUFACTURER	Precision Electronics Inc., 9101 King Ave., Franklin Park, Illinois		
TYPE SET	AC Operated 8 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	42 Watts, .39 Amp. @ 117 Volts AC (FM)
TUNING RANGE	BROADCAST 535 - 1640KC	FREQ. MOD.	88 - 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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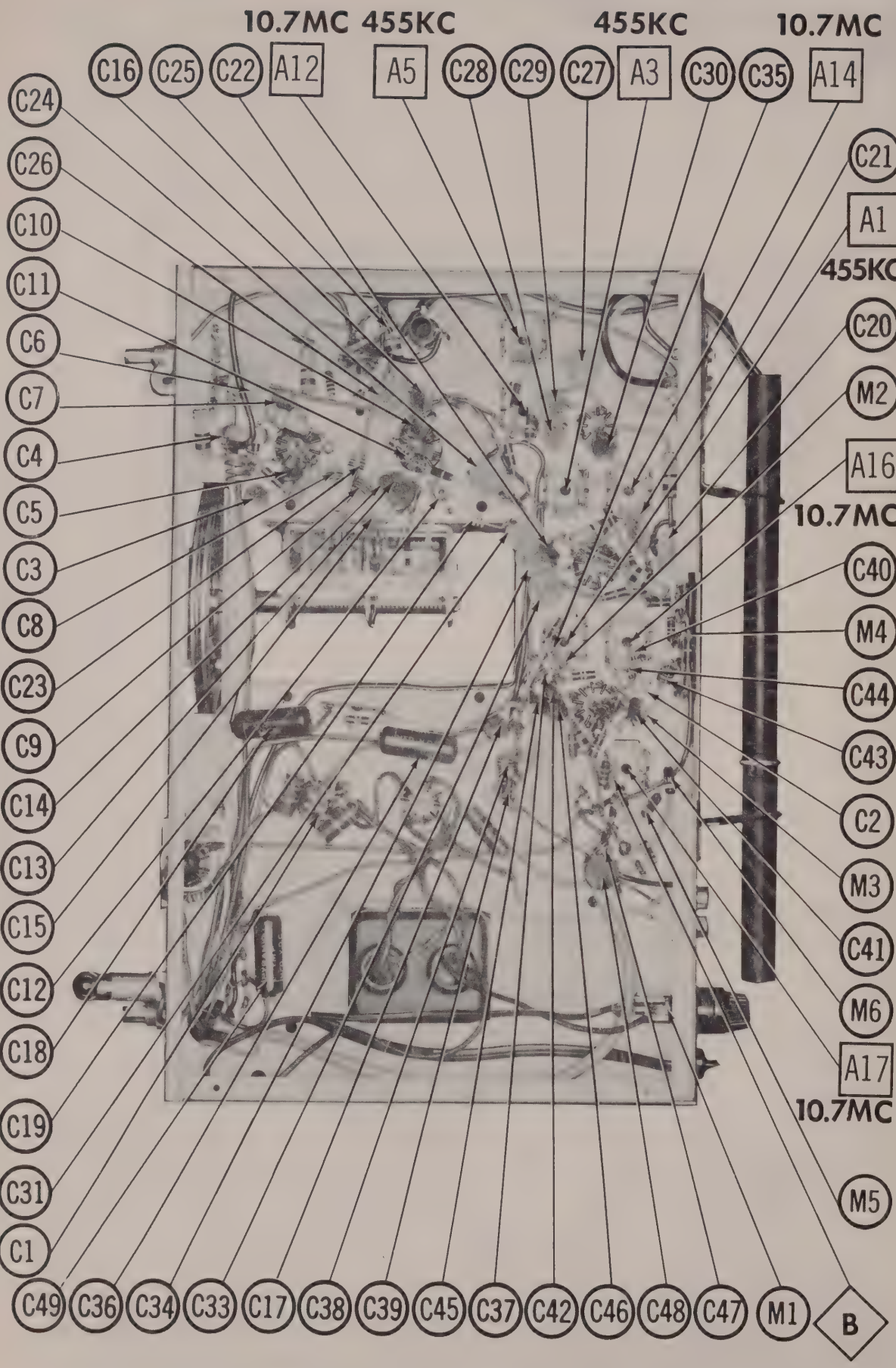
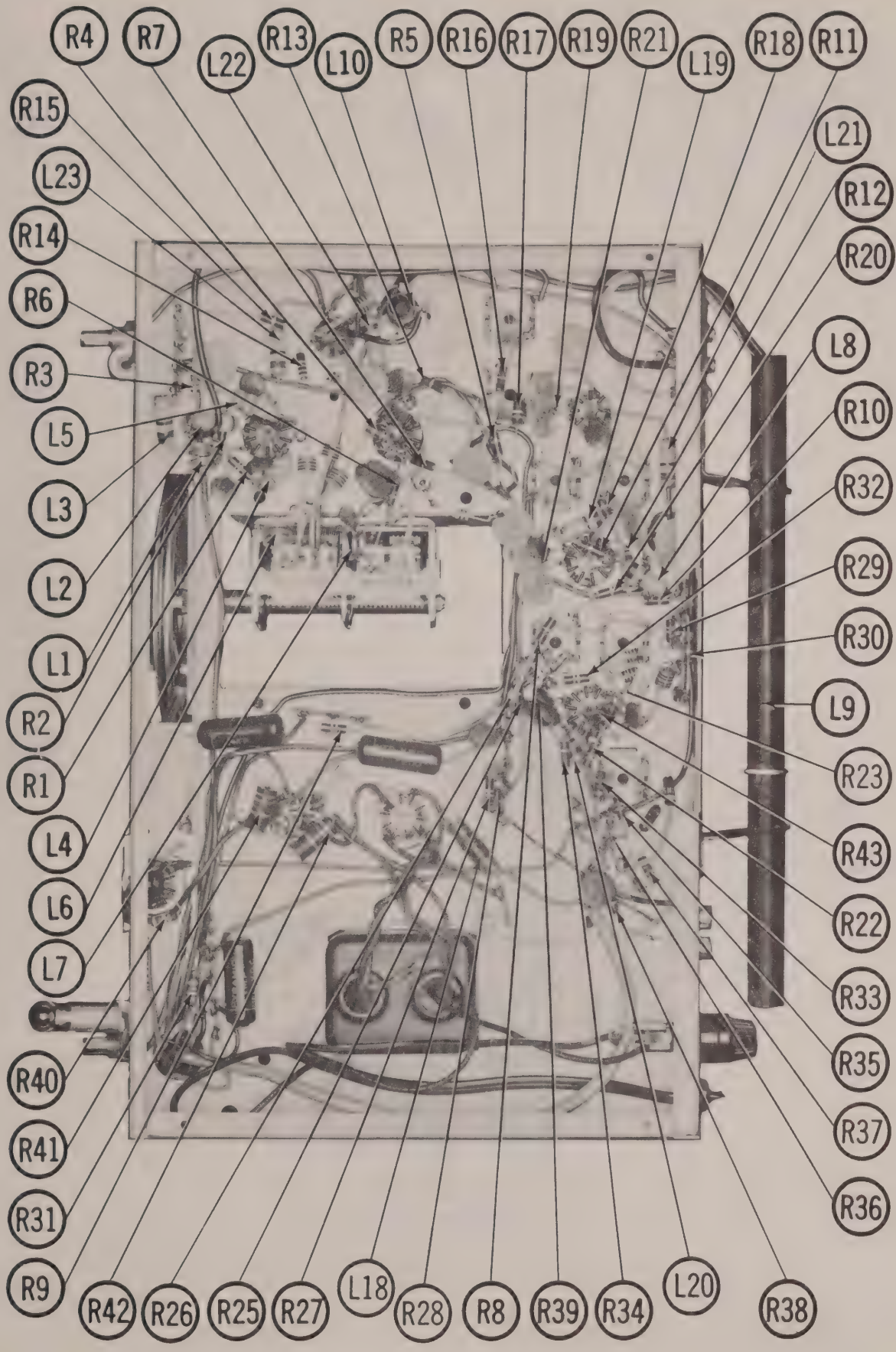
JL753

SET 478 FOLDER 12



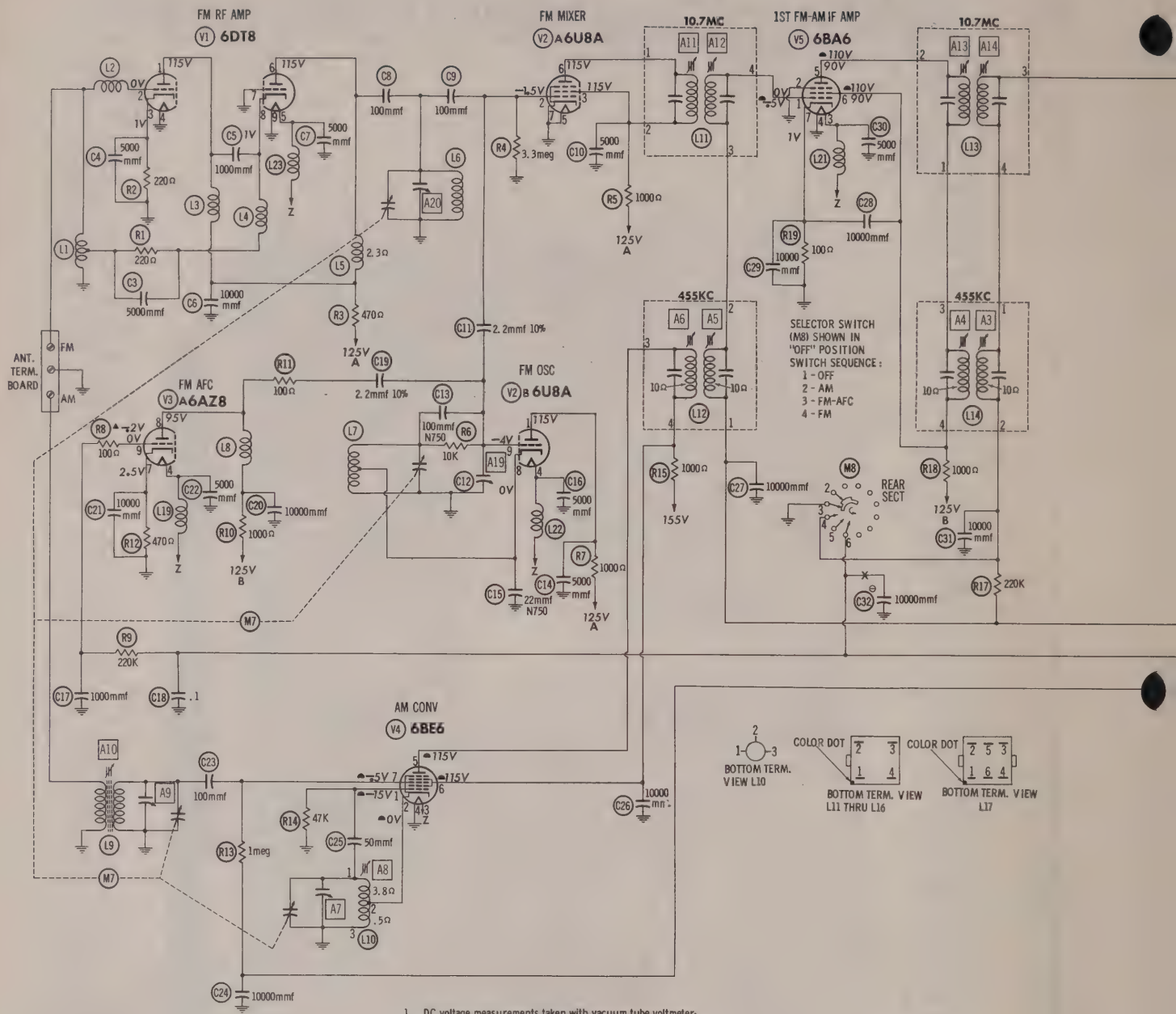
CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

GROMMES
MODEL 102GT

FOLDER 12



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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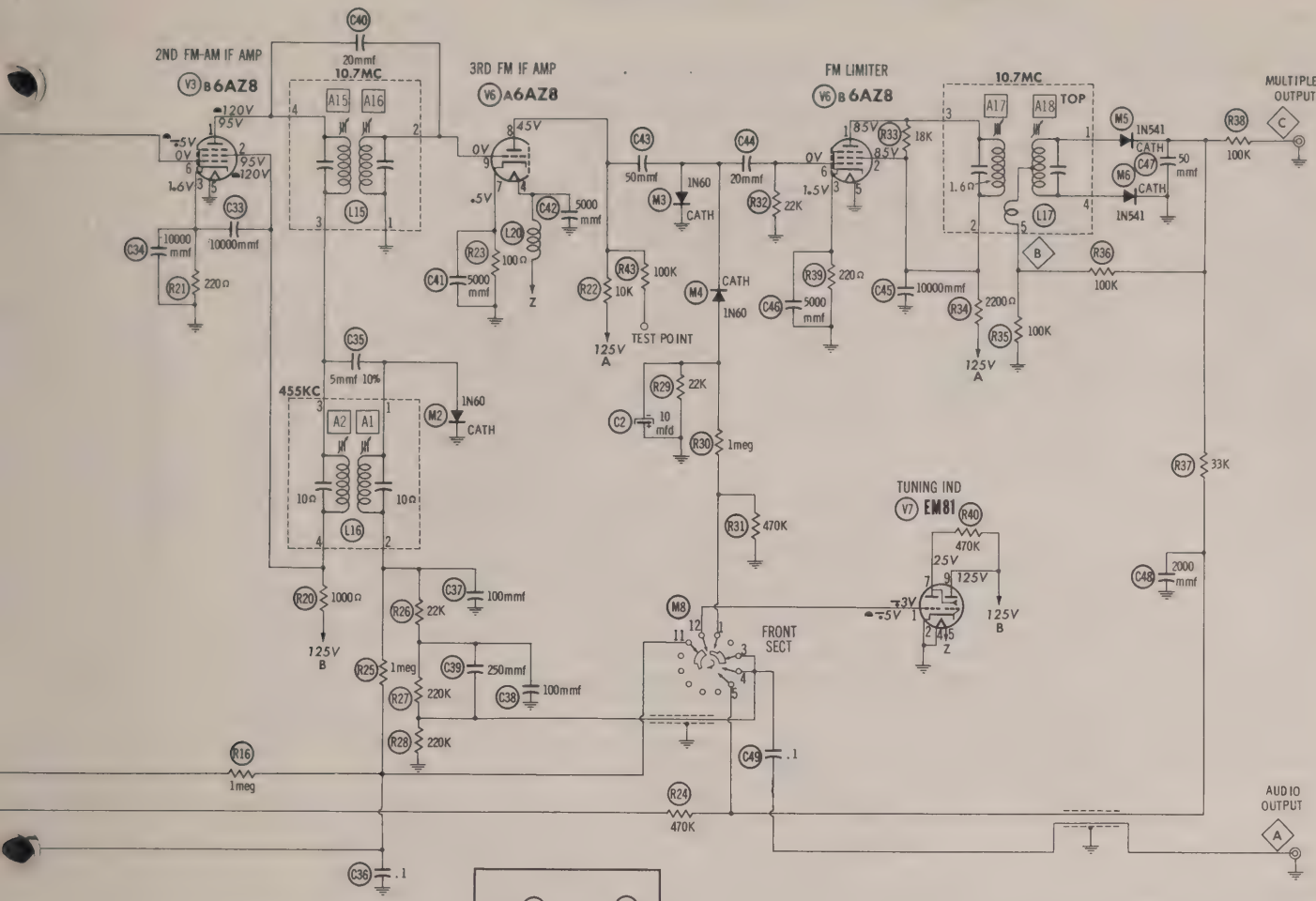
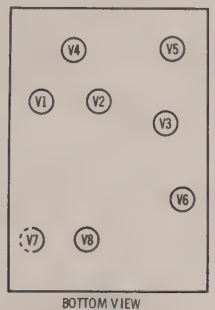
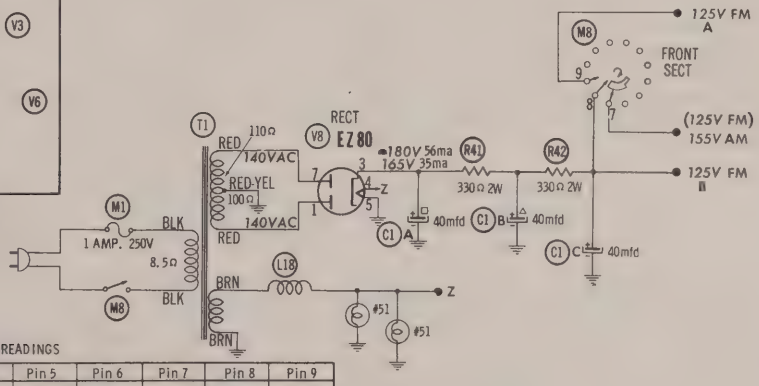




BOTTOM VIEW
TUBE LAYOUT



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DT8	†1100Ω	.2Ω	220Ω	0Ω	.8Ω	†1100Ω	0Ω	220Ω	0Ω
V2	6U8A	†1700Ω	3.3meg	†1700Ω	.8Ω	0Ω	†1700Ω	0Ω	0Ω	10K
V3	6AZ8	†1700Ω	†1700Ω	220Ω	.8Ω	0Ω	12Ω ▲ 2.3meg	470Ω	†1700Ω	220K ▲ 890K
V4	6BE6	▲ 47Ω	▲ .6Ω	.2Ω	0Ω	▲ †1700Ω	▲ 1700Ω	▲ 2.4meg		
V5	6BA6	220K ▲ 2meg	0Ω	.8Ω	0Ω	†1700Ω	†1700Ω	100Ω		
V6	6AZ8	†2900Ω	†2900Ω	220Ω	.8Ω	0Ω	22K	100Ω	†10K	.1Ω
V7	EM81	330K	0Ω	TP	0Ω	.2Ω	NC	†470K	TP	†660Ω
V8	EZ80	100Ω	NC	¶	.2Ω	0Ω	NC	110Ω	NC	TP

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
△ MEASURED IN "FM AFC" POSITION
NC NO CONNECTION
TP TIE POINT

GROMMES MODEL 102GT

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A6	GENERAL CEMENT #5097, 8727 WALSCO #2515
A7, A9, A20	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A19	GENERAL CEMENT #8271, 8273, 8275, 8276, 8721, 8722, 9150, 9298, 5003 WALSCO #2516, 2519
A11 thru A18	GENERAL CEMENT #8282, 8606, 8606L, 9295 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Conv. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open	AC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	High side to antenna terminals. Low side to chassis.	1600KC	1600KC	"	A7	Adjust for maximum deflection.
3.	"	600KC	600KC	"	A8	Adjust for maximum deflection. Repeat steps 2 and 3.
4.	"	1400KC	1400KC	"	A9	Adjust for maximum deflection.
5.	"	600KC	600KC	"	A10	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .001mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe thru 100K to point (B). Common to chassis.	A11, A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.
7.	"	"	"	DC probe to point (C). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru .001mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference	Vert. Amp. thru 27K to point (B). Low side to chassis.	A11, A12, A13, A14, A15, A16, A17	Adjust for maximum gain and symmetry of response similar to Fig. 1.
7.	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	106MC (Unmod.)	(FM) 106MC	DC probe to point (B). Common to chassis.	A19, A20	Adjust for maximum deflection
9.	"	90MC	90MC	"	L6, L7	"

FIG. 1

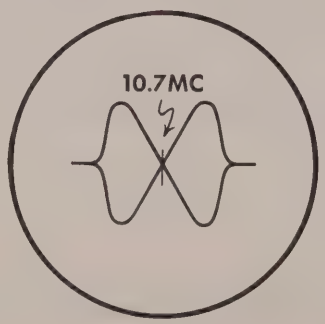


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6DT8 (6BQ7) *
V2	FM Mixer - Osc.	6U8A
V3	FM AFC - 2nd FM IF Amp. -2nd AM IF Amplifier	6AZ8
V4	AM Converter	6BE6
V5	1st FM IF Amp. - 1st AM IF Amplifier	6BA6
V6	3rd FM IF Amp. - FM Limiter	6AZ8
V7	Tuning Indicator	EM81/6DA5
V8	Rectifier	EZ80/6V4

* Alternate

ELECTROLYTIC CAPACITORS

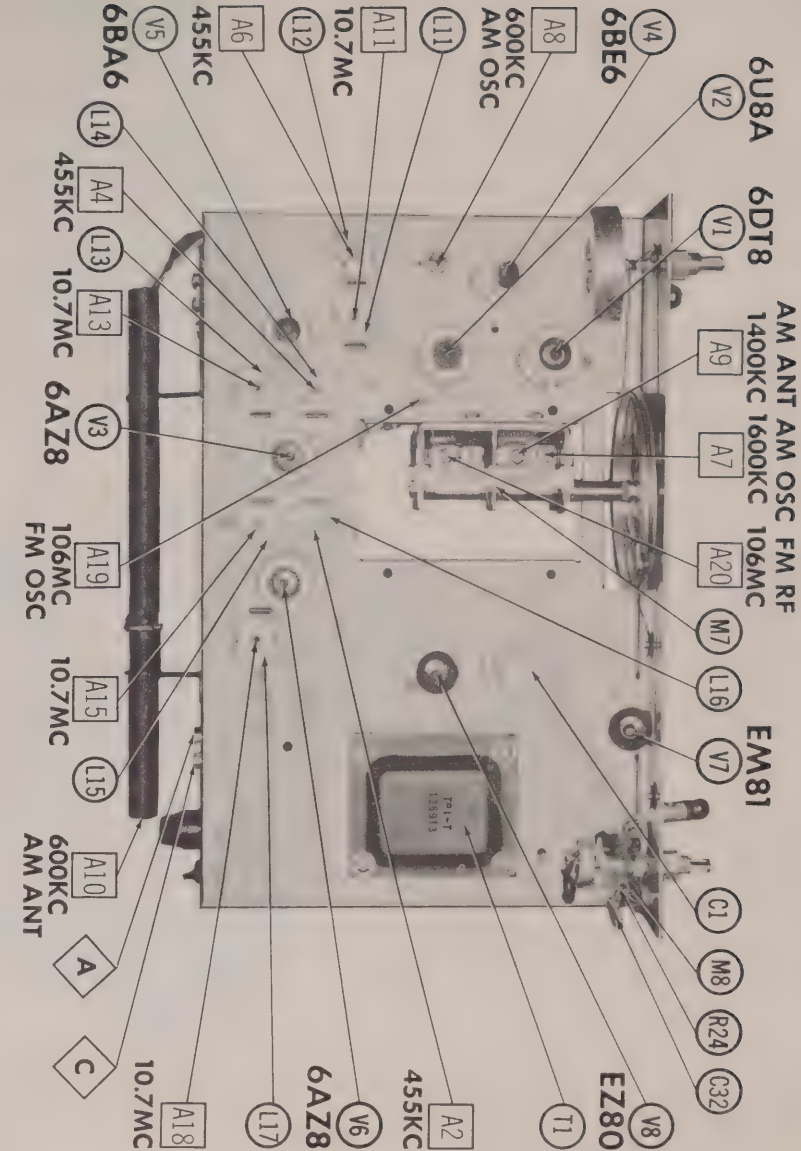
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150		AFH3-10	C0090	FP311.5	TMT-9	TVL-3442	
B	▲40	150							
C	40	150							
C2	10	25		PWE25010	EC10-25	TC22	ML10-25	TE-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C4	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C5	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C6	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C8	100			SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C9	100			SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C10	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C11	2.2	10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C12									
C13	100	N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C14	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C15	22	N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C16	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C17	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C18	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C19	2.2	10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C20	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C23	100			SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C24	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	50			SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C26	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C27	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C28	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C30	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C31	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	10000		Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C34	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	5	10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C36	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C37	100			SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C38	100			SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C39	250			DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C40	20			SI 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C42	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C43	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C44	20		SI 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C46	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C47	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C48	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C49	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1

Note 1. Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	220Ω	
R2	220Ω	
R3	470Ω	
R4	3.3meg	
R5	1000Ω	
R6	10K	
R7	1000Ω	
R8	100Ω	
R9	220K	
R10	1000Ω	
R11	100Ω	
R12	470Ω	
R13	1meg	
R14	47K	
R15	1000Ω	

ITEM No.	RATING	REMARKS
R16	1meg	
R17	220K	
R18	1000Ω	
R19	100Ω	
R20	1000Ω	
R21	220Ω	
R22	10K	
R23	100Ω	
R24	470K	
R25	1meg	
R26	22K	
R27	220K	
R28	220K	
R29	22K	
R30	1meg	

ITEM No.	RATING	REMARKS
R31	470K	
R32	22K	
R33	18K	
R34	2200Ω	
R35	100K	
R36	100K	
R37	33K	
R38	100K	
R39	220Ω	
R40	470K	
R41	330Ω 2W	
R42	330Ω 2W	
R43	100K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		GROMMES PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Antenna Coil							
L2	FM Antenna Coil							.24uh ①
L3	RF Choke							luh ①
L4	Cathode Choke							.24uh ①
L5	RF Choke							3.3uh ①
L6	FM RF Coil							
L7	FM Osc. Coil							
L8	RF Choke							luh ①
L9	Loopstick				BC-418			
L10	AM Osc. Coil				BC-393			
L11	1st FM IF	EI-957J	16-3487	16-3487	FM-254	1463		
L12	1st AM IF	1655-19	16-6758	16-6758	BC-352	12-C1	RF-1	
L13	2nd FM IF	EI-957J	16-3487	16-3487	FM-254	1463		
L14	2nd AM IF	1655-19	16-6758	16-6758	BC-353	12-C2	RF-2	
L15	3rd FM IF	EI-957J	16-3487	16-3487	FM-254	1463		
L16	3rd AM IF	1655-19	16-6758	16-6758	BC-353	12-C2	RF-2	
L17	Discriminator	ER-640J	17-3498	17-3498	FM-255	1465		
L18	Fil. Choke							2.5uh
L19	Fil. Choke							luh ①
L20	Fil. Choke							luh ①
L21	Fil. Choke							luh ①
L22	Fil. Choke							luh ①
L23	Fil. Choke							luh ①

① IRC Part #CLA.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	GROMMES PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .39A	280VCT @ .055A	6.3V @ 3A	TP1-TA		P-3048				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1A 250V			312001 (3AG 1A 250V)	342001	AGC 1	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GROMMES PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	AM Detector (Pigtail)
M3	1N60		1N60	1N60	1N60	FM Limiter (Pigtail)
M4	1N60		1N60	1N60	1N60	FM Limiter (Pigtail)
M5	1N541		1N636	1N295	1N295	Discriminator (Pigtail) } Matched
M6	1N541		1N636	1N295	1N295	Discriminator (Pigtail) } Pair

MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M7	Tuning Cap.		2 Gang (Ant. 51-571mmf, Osc. 56-224mmf)
M8	Switch		Function

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

OLYMPIC MODEL SP-60

OLYMPIC MODEL
SP-60

OLYMPIC MODEL
SP-60

TRADE NAME	Olympic Model SP-60
MANUFACTURER	Olympic Radio & TV Inc., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105-125 Volts AC, 60 Cycles RATING 31 Watts, .36 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #550-101 - SEE SIMILAR MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT518

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amplifier	7025 (12AX7) *	V3	Channel 1 Output	50L6GT
V2	Channel 1AF Amp. - Channel 2 AF Amplifier	7025 (12AX7) *	V4	Channel 2 Output	50L6GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	150	150-152	PRS2245	BBRD0183.7	WD235	TDLD-14	TVAS-2463 *	
B	50	150							
C2A	40	150	150-151		BBRT44215	TCT3116	TDLT-4	TVA-2428	
B	40	150			BR2025	TC45	TD-20-150	TVA-2445	
C	20	150							
D	20	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C4	20000 100V	Note 1	BPD-02	DDM-203	BYB6S2	CCD-203	GP120	5HK-S20
C5	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C6	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C7	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	20000 100V	Note 1	BPD-02	DDM-203	BYB6S2	CCD-203	GP120	5HK-S20
C10	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C11	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C12	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	1/2	120-153	B-76	AD47-2meg-Z	Q13-139	■	Volume, Channel 2
B	2meg	1/2		SR-76	Not Req.	M13-139	■	Volume, Channel 1
C	Shaft			Not Req.	FS-3	Not Req.		
R2A	100K	1/2	120-154 ①	B-41		Q13-128	▲	Tone, Channel 1
B	100K	1/2		SR-41		M13-128	▲	Tone, Channel 2
R3A	1meg	1/2	120-155B	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

■ "STA-LOC" Equivalent: FA26A, RU26A, CS3500. ① Some versions may use 500K dual tone controls (Part #120-159).
▲ "STA-LOC" Equivalent: FA15A, RU15A, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

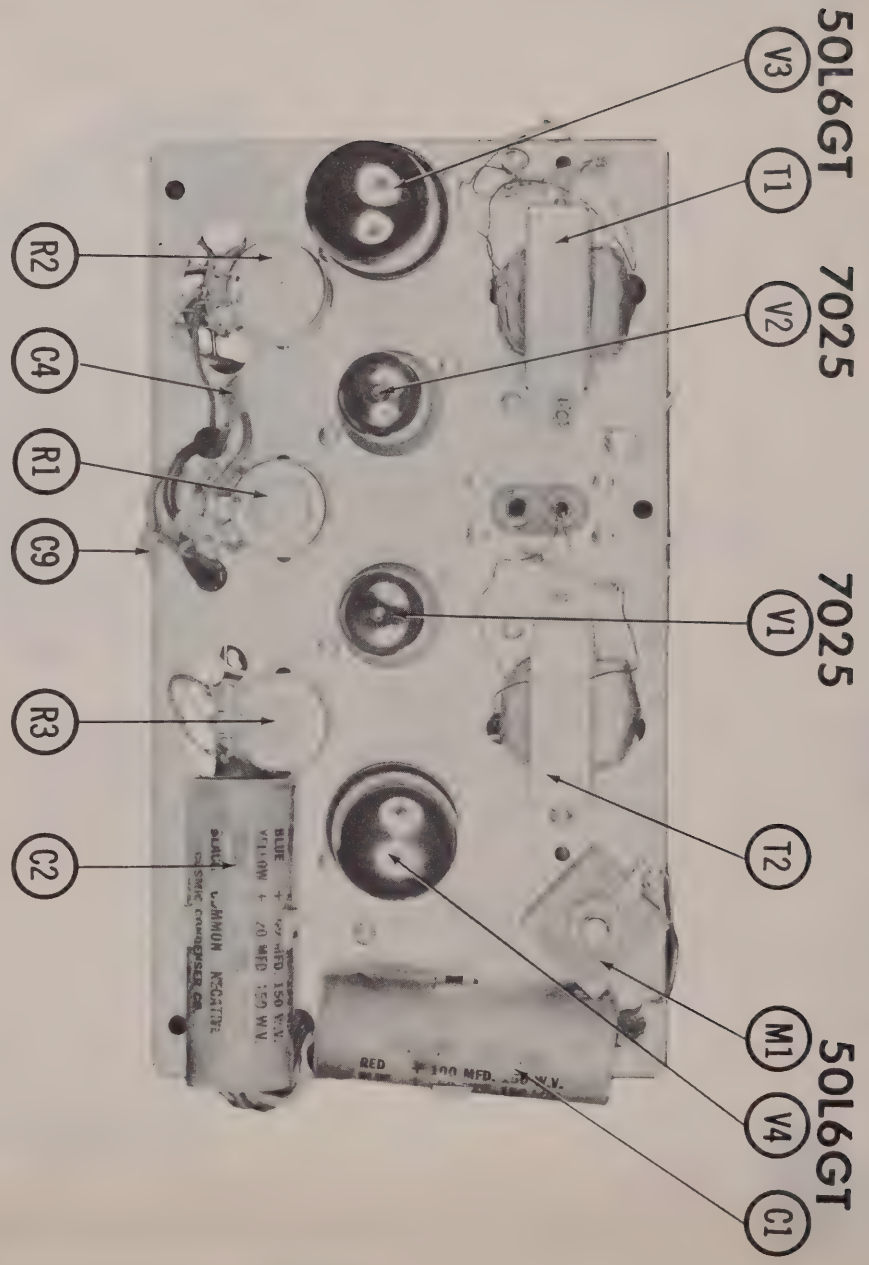
ITEM No.	RATING	REMARKS
R4	500K	(470K) *
R5	270K	
R6	47K	
R7	1000Ω	
R8	500K	(470K) *
R9	100K	
R10	47K	
R11	2200Ω	
R12	500K	(470K) *

ITEM No.	RATING	REMARKS
R13	2200Ω	
R14	150Ω 5%	
R15	500K	(470K) *
R16	270K	
R17	47K	
R18	1000Ω	
R19	500K	(470K) *
R20	100K	
R21	47K	

ITEM No.	RATING	REMARKS
R22	2200Ω	
R23	500K	(470K) *
R24	2200Ω	
R25	150Ω 5%	
R26	22K	
R27	22K	
R28	50Ω 5% 1W	(47Ω 1W) *
R29	22Ω 2W	(33Ω 2W) *

* Alternate Value

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω Tap @ 9%	3-4Ω	138-132	24S87	A-3031		A-3336	24S87	S-16X	
T2	2600Ω Tap @ 9%	3-4Ω	138-132	24S87	A-3031		A-3336	24S87	S-16X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA OLYMPIC PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	175-147	6A1	
SP2	6"	PM	3-4Ω	175-147	6A1	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA OLYMPIC PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.058A	265-125 ①	T065 * SD94 ♦	1234AH * HA154 ♦	100A * F4 ♦	SR200 ♦	* Selenium Type ♦ Silicon Type

① Some versions may use a silicon type in this application (Part #265-102).

PHONO CARTRIDGE

ITEM No.	OLYMPIC PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		86-TS	N7-7 N8-3	66 ♦	Not Req.			8TA4S	N-8TA-S

♦ Use Mount PT-3.
NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE REPLACEMENT CARTRIDGE LISTED.
FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA OLYMPIC PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3		W-106STS † or W-106STD ♦	CRA-55 † or CRA-55D ♦ and CRA-55LP † or CRA-55LPD † ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M4	Switch		Off-On (Part of Changer)
M5	Motor		Turntable Drive (Part of Changer)

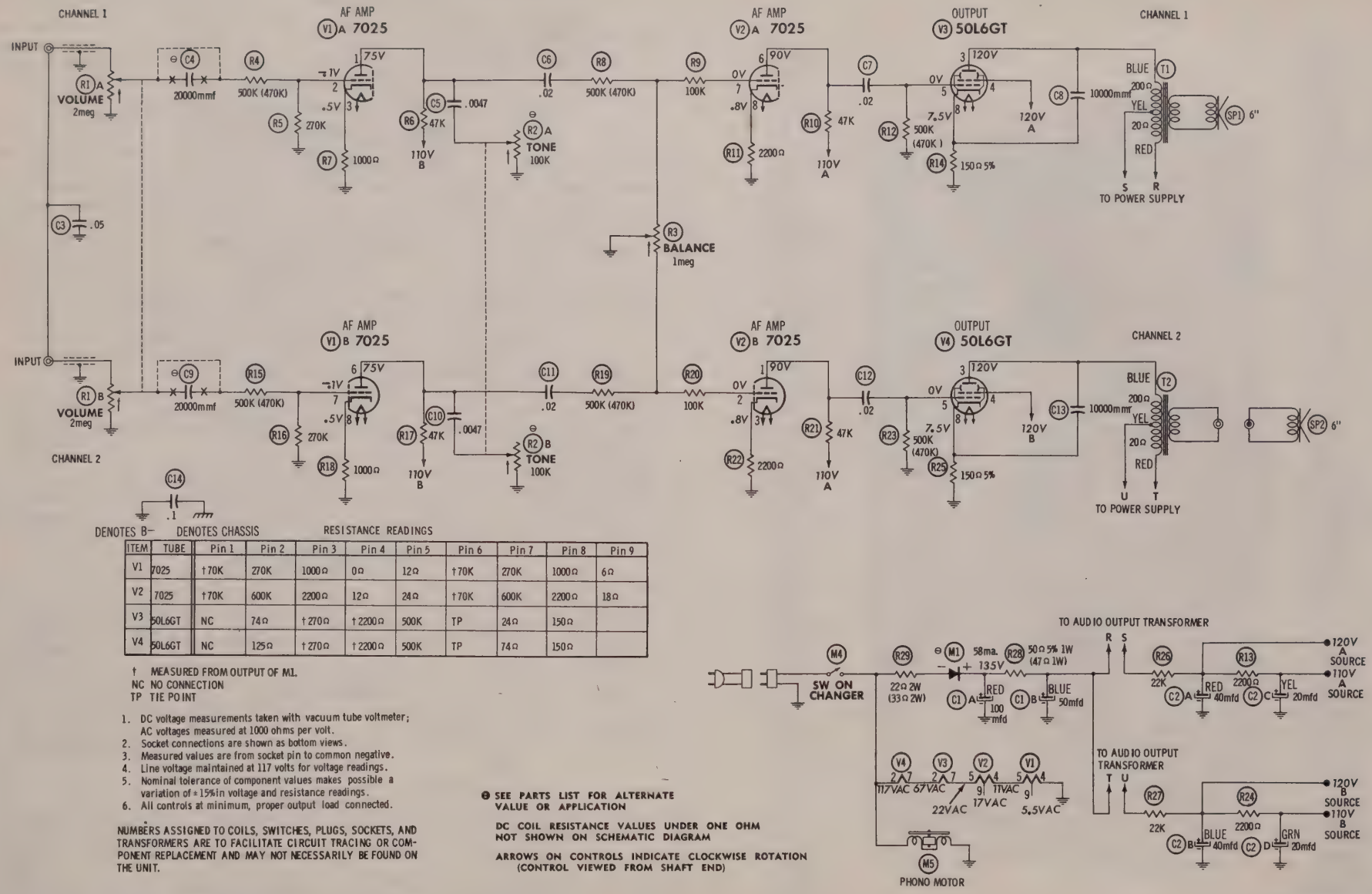
CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†70K	270K	1000Ω	0Ω	12Ω	†70K	270K	1000Ω	6Ω
V2	7025	†70K	600K	2200Ω	12Ω	24Ω	†70K	600K	2200Ω	18Ω
V3	50L6GT	NC	74Ω	†270Ω	†2200Ω	500K	TP	24Ω	150Ω	
V4	50L6GT	NC	125Ω	†270Ω	†2200Ω	500K	TP	74Ω	150Ω	

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLYMPIC MODEL SP-60

PHOTOFACT® Folder

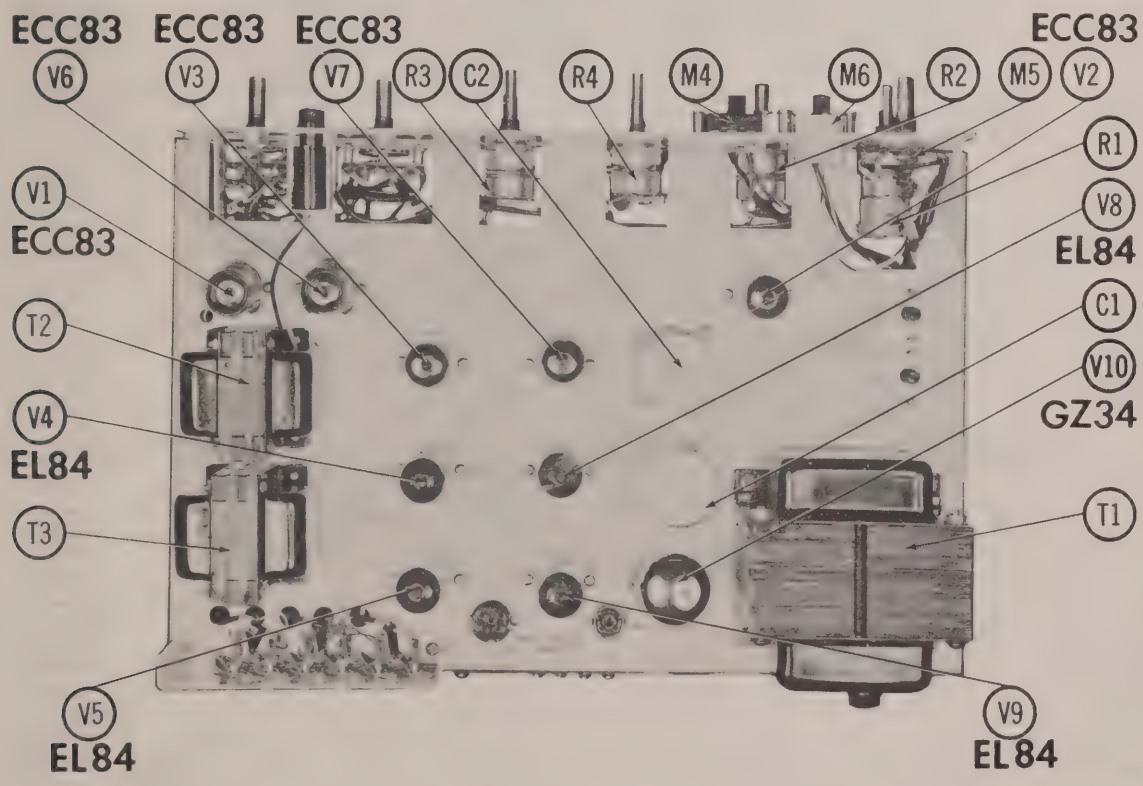
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PILOT MODEL 240

PILOT MODEL 240

TRADE NAME	Pilot Model 240
MANUFACTURER	Pilot Radio Corp., 37-06 36th Street, Long Island City 1, N.Y.
TYPE SET	AC Operated 10 Tube Stereo Amplifier
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 110 Watts, .96 Amp. @ 117 Volts AC

PILOT MODEL 240



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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JV556

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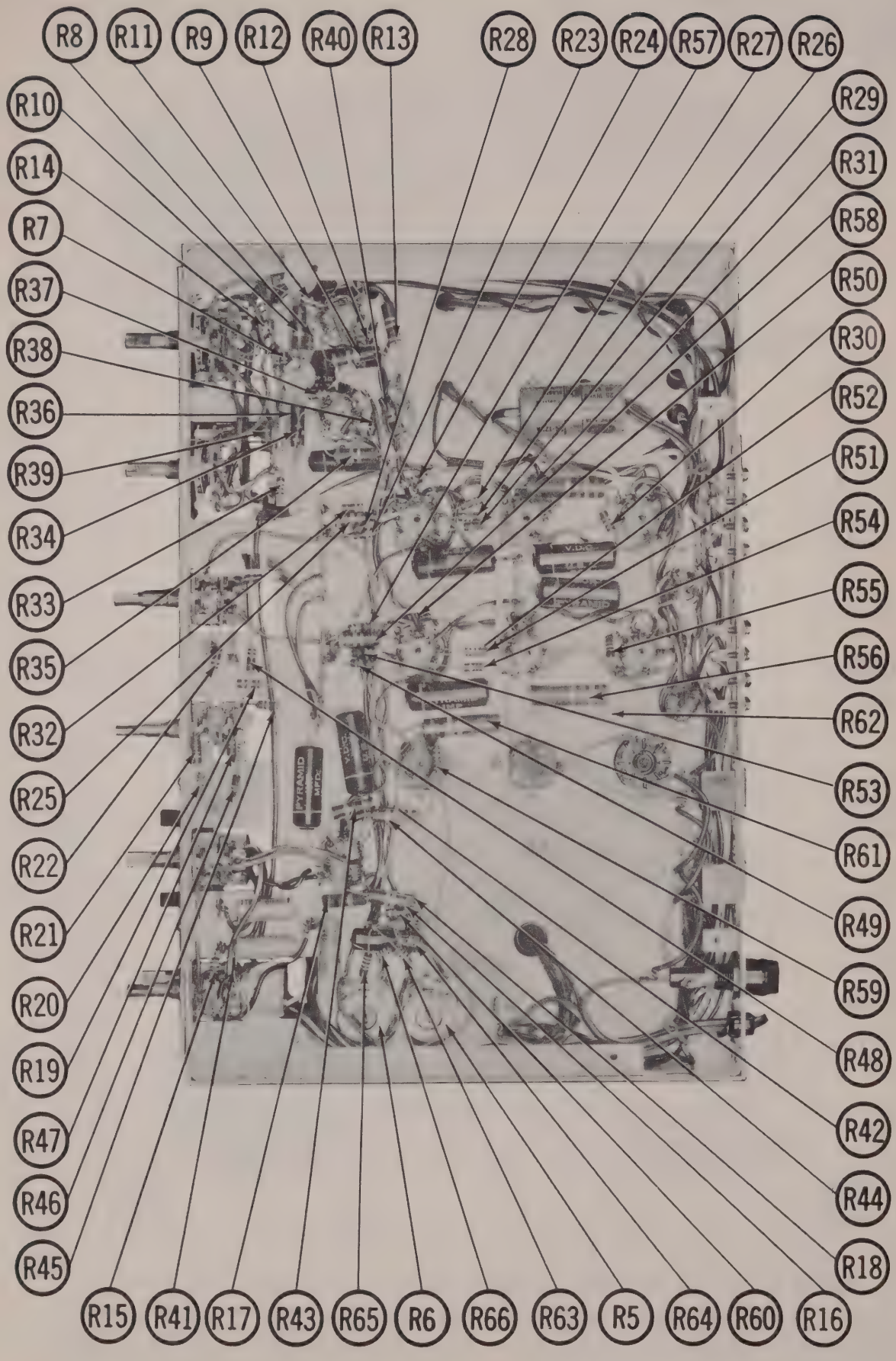
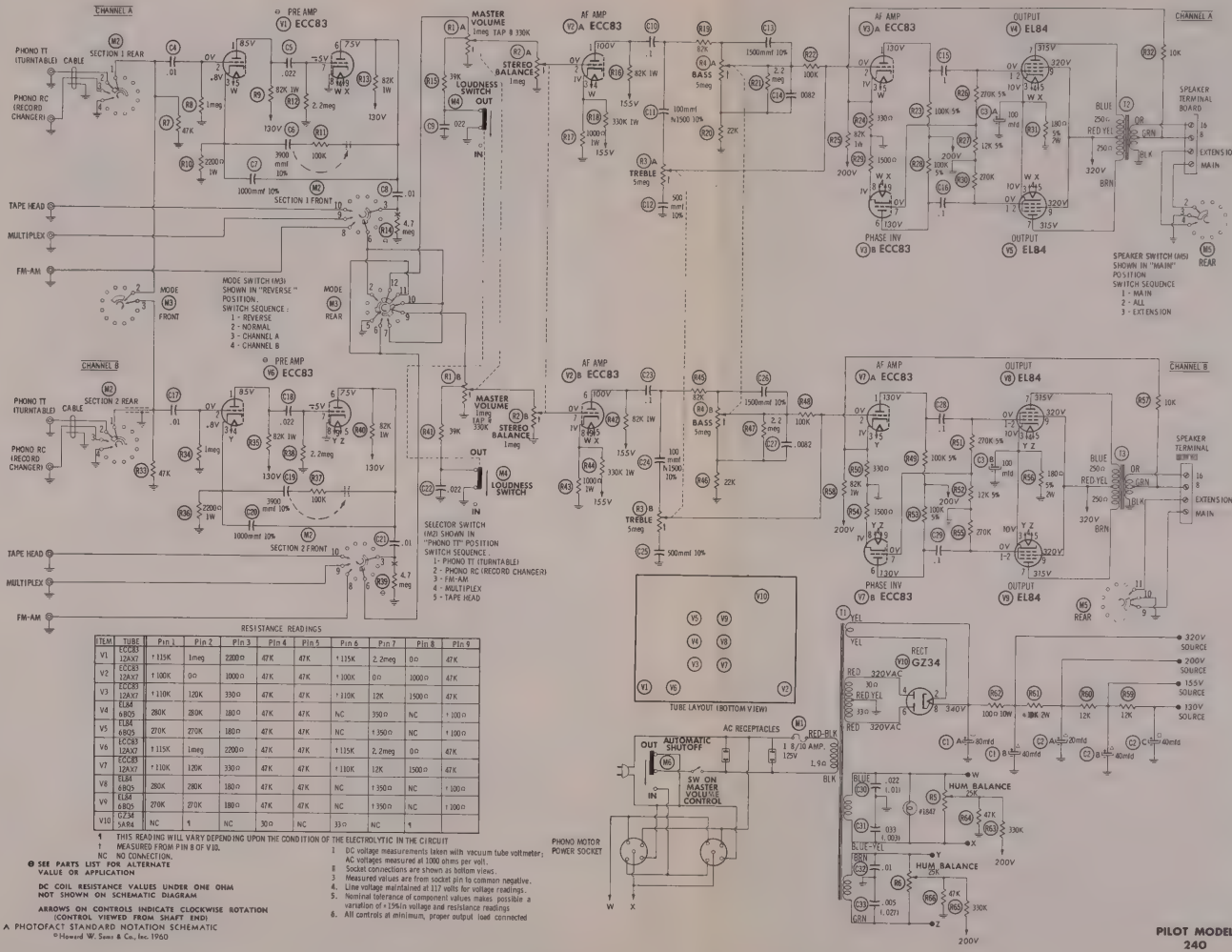
SET 478 FOLDER 14



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†135K	1meg	2200Ω	47K	47K	†135K	2.2meg	0Ω	47K
V2	ECC83 12AX7	†100K	0Ω	1000Ω	47K	47K	†100K	0Ω	1000Ω	47K
V3	ECC83 12AX7	†110K	120K	330Ω	47K	47K	†110K	12K	1500Ω	47K
V4	EL84 6BQ5	280K	280K	180Ω	47K	47K	NC	390Ω	NC	†100Ω
V5	EL84 6BQ5	270K	270K	180Ω	47K	47K	NC	†350Ω	NC	†100Ω
V6	ECC83 12AX7	†115K	1meg	2200Ω	47K	47K	†115K	2.2meg	0Ω	47K
V7	ECC83 12AX7	†110K	120K	330Ω	47K	47K	†110K	12K	1500Ω	47K
V8	EL84 6BQ5	280K	280K	180Ω	47K	47K	NC	†350Ω	NC	†100Ω
V9	EL84 6BQ5	270K	270K	180Ω	47K	47K	NC	†350Ω	NC	†100Ω
V10	GZ34 5AR4	NC	¶	NC	300Ω	NC	330Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
† MEASURED FROM PIN 8 OF V10.
NC NO CONNECTION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1 DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2 Socket connections are shown as bottom views.
3 Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Normal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PILOT MODEL 240

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Preamp.	ECC83/12AX7 (7025)*	V6	Channel B Preamp.	ECC83/12AX7 (7025)*
V2	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7	V7	Channel B AF Amp. Phase Inverter	ECC83/12AX7
V3	Channel A AF Amp. - Phase Inverter	ECC83/12AX7	V8	Channel B Output	EL84/6BQ5
V4	Channel A Output	EL84/6BQ5	V9	Channel B Output	EL84/6BQ5
V5	Channel A Output	EL84/6BQ5	V10	Rectifier	GZ34/5AR4

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▬80	400	24-124	AFH3-30-60	C0230	FP149	TMS-52	TVL-4739	
B	▲40	400			TC78	TC78	TD-40-450		
C2A	▬20	350	24-174	AFH3-43-50	D0430	FP376.9	TMT-39	TVL-3786	
B	▲40	350							
C	■40	350							
C3A	100	25	24-170	PRS2245	BBRD101015	TCD2155	TDLD-15	TVAS-2220*	
B	100	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C5	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C6	3900 10%		DI-4000		PM6D4	CCD-392	JL-239	10TS-D39
C7	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C8	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C9	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C10	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C11	100 N1500 10%			TCL-100		*		

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	500 10%		DI-500	DD-501	PM6T5	CCD-501	GP350	10TS-T50
C13	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C14	.0082 200V		P684CM-0082	DD-822	HVE16D8	6DP-2-822	GEM-6282	5BF-D82
C15	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C16	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C17	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C18	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C19	3900 10%		DI-4000		PM6D4	CCD-392	JL-239	10TS-D39
C20	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C21	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C22	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C23	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C24	100 N1500 10%			TCL-100		*		
C25	500 10%		DI-500	DD-501	PM6T5	CCD-501	GP350	10TS-T50
C26	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C27	.0082 200V		P684CM-0082	DD-822	HVE16D8	6DP-2-822	GEM-6282	5BF-D82
C28	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C29	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C30	.022 400V	(.01) ♦	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C31	.033 400V	(.003) ♦	P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	4TM-S33
C32	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C33	.005 400V	(.027mfd) ♦	P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-425	6TM-D5

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
♦ Alternate value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	36-73					Master Volume, Channel A
	330K tap							
B	1meg	½					■	Master Volume, Channel B
	330K tap							
C	Switch							Power Off-On
R2A	1meg	½	39-57					
B	1meg	½					▲ UE4008	Stereo Balance, Channel A Stereo Balance, Channel B
R3A	5meg	½	37-41	F1-83				
B	5meg	½		R2-83			▬ UE3854	Treble, Channel A Treble, Channel B
R4A	5meg	½	37-41	F1-83				
B	5meg	½		R2-83			▬ UE3854	Bass, Channel A Bass, Channel B
R5A	25K	½	39-44	AB-26	B47-25K-S	B11-120	TA253L	Hum Balance, Channel A
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R6A	25K	½	39-44	AB-26	B47-25K-S	B11-120	TA253L	Hum Balance, Channel B
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

■ "STA-LOC" Equivalent: FA16T35, RU16T35, CS3500, US-41. ▲ "STA-LOC" Equivalent: FA16A, RU16A, CS3500.
▬ "STA-LOC" Equivalent: FA56A, RU56A, OS812, IS1312.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	47K	
R8	1meg	
R9	82K 1W	
R10	2200Ω 1W	
R11	100K	
R12	2.2meg	
R13	82K 1W	
R14	4.7meg	Note 1
R15	39K	
R16	82K 1W	
R17	1000Ω 1W	
R18	330K 1W	
R19	82K	
R20	22K	
R21	2.2meg	
R22	100K	
R23	100K 5%	
R24	330Ω	
R25	82K 1W	
R26	270K 5%	

ITEM No.	RATING	REMARKS
R27	12K 5%	
R28	100K 5%	
R29	1500Ω	
R30	270K	
R31	180Ω 5% 2W	
R32	10K	
R33	47K	
R34	1meg	
R35	82K 1W	
R36	2200Ω 1W	
R37	100K	
R38	2.2meg	
R39	4.7meg	Note 1
R40	82K 1W	
R41	39K	
R42	82K 1W	
R43	1000Ω 1W	
R44	330K 1W	
R45	82K	
R46	22K	

ITEM No.	RATING	REMARKS
R47	2.2meg	
R48	100K	
R49	100K 5%	
R50	330Ω	
R51	270K 5%	
R52	12K 5%	
R53	100K 5%	
R54	1500Ω	
R55	270K	
R56	180Ω 5% 2W	
R57	10K	
R58	82K 1W	
R59	12K	
R60	12K	
R61	10K 2W	
R62	100K 10W	
R63	330K	
R64	47K	
R65	330K	
R66	47K	

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .96A	640VCT @ .160A	5V @ 1.9A	55-73						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.4A	6.3V @ 2.25A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7400Ω	16Ω tap @ 8Ω	56-60							
T3	7400Ω	16Ω tap @ 8Ω	56-60							

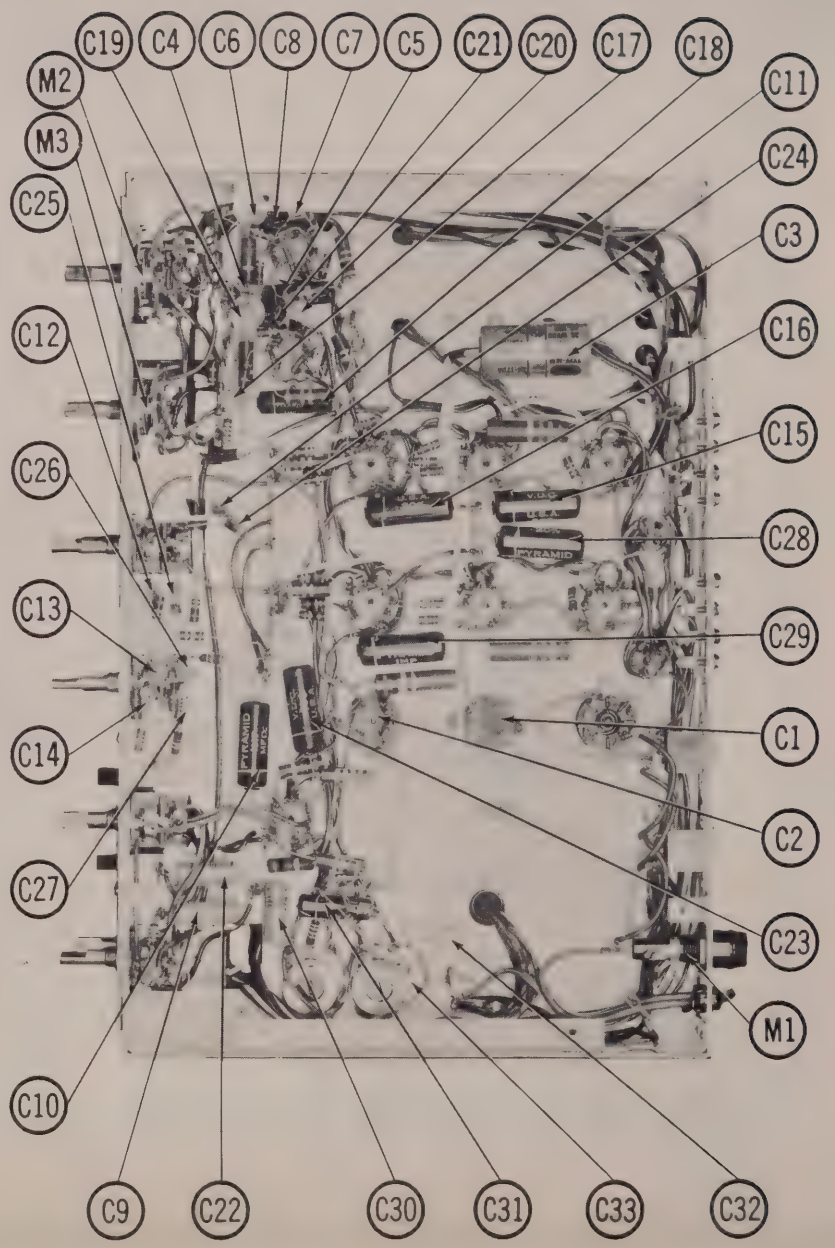
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PILOT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1.8A 125V S/B	111-19		31301.8	342001	MDL 1 8/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M2	Switch	100-151	Selector (Rotary Wafer Type)
M3	Switch	100-152	Mode (Rotary Wafer Type)
M4	Switch	101-26	Loudness In-Out (DPDT Slide Type)
M5	Switch	100-146	Speakers (Main-All-Extension) (Rotary Wafer Type)
M6	Switch	101-29	Automatic Shut-Off (Out-In)

CHASSIS—BOTTOM VIEW



PHOTOFACT® Folder with CIRCUITRACE®

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RCA VICTOR MODELS PT1, T1EH, T1EN, T1JE, T2E, T2J, T2K, TC1E, TC1FE, TC1JE (Ch. RC-1189, B, RC-1196)

RCA VICTOR MODELS PT1, T1EH, T1EN, T1JE, T2E, T2J, T2K, TC1E, TC1FE, TC1JE (Ch. RC-1189, B, RC-1196)

MODEL T1JE

RCA VICTOR MODELS PT1, T1EH, T1EN, T1JE, T2E, T2J, T2K, TC1E, TC1FE, TC1JE (Ch. RC-1189, B, RC-1196)

TRADE NAME	RCA Victor Models PT1 (Ch. RC-1189B); T1JE, T1EH, T1EN, T2E, T2J, T2K (Ch. RC-1189); TC1E, TC1FE,
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J. TC1JE (Ch. RC-1196)
TYPE SET	Battery Operated Transistorized Portable AM Receiver (TC1 Series are Clock Versions)
POWER SUPPLY	4.5 Volts DC
TUNING RANGE—BROADCAST	535-1620KC
RATING	9MA @ 4.5 Volts DC (No Signal, Min. Volume)
	30MA @ 4.5 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A6 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A4, A5 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		High side thru .01mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A5	Adjust for maximum output while rocking tuning gang.
4.		"	600KC	Tune to 600KC signal	"	A6	"

DISASSEMBLY

PT1, T1, T2 Series
Tuning knob is captive. Shaft must be pulled from knob. Remove cabinet back by pulling on bottom and disengaging top tabs.

TC1 Series
Press on cabinet area marked "Push Here to Open". Lift lid. Remove 2 screws from battery compartment. Open case from bottom, disengaging tab from lip at cabinet top.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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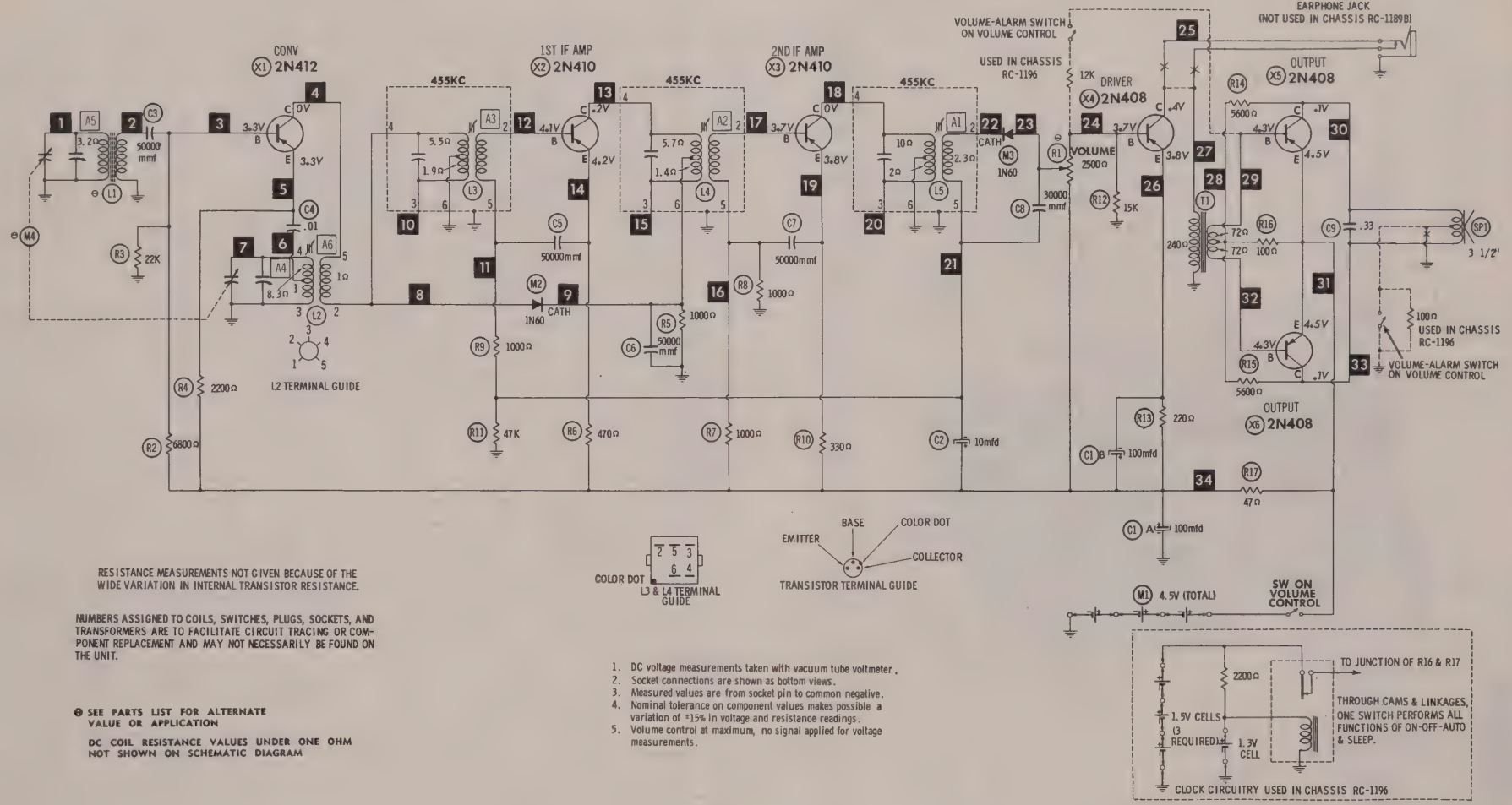
JF572

SET 478 FOLDER 15



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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RCA VICTOR MODELS PT1, T1EH, T1EN, T1JE, T2E, T2J, T2K, TC1E, TC1FE, TC1JE (Ch. RC-1189, B, RC-1196)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	Converter		2N412	2N486	2N412	PNP
X2	2N410	1st IF Amplifier		2N410	2N483	2N410	PNP
X3	2N410	2nd IF Amplifier		2N410	2N483	2N410	PNP
X4	2N408	Driver		2N408	2N362	2N408	PNP
X5	2N408	Output		2N408	2N362	2N408	PNP } Matched
X6	2N408	Output		2N408	2N362	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	100	10	108151		ECPAP-7			VLPS-2451 *	
B	100	10							
C2	10	10	106114	XPP10010	NLW10-15	TT12X10	ML10-15	TE-1114	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	50000		BPD-05	DD-503	MP2S5	1DP-2-503	GP150	5HK-S50
C4	.01 50V		V84C2S1	DD-103	BYA10S1	1DP-1-103	GP110	2WF-S10
C5	50000		BPD-05	DD-503	MP2S5	1DP-2-503	GP150	5HK-D50
C6	50000		BPD-05	DD-503	MP2S5	1DP-2-503	GP150	5HK-D50
C7	50000		BPD-05	DD-503	MP2S5	1DP-2-503	GP150	5HK-D50
C8	30000		BPD-03	DD-303	BYB6S3	1DP-1-303	GP130	5HK-S30
C9	.33 200V		P288N-33		CUB6P33	2DP-5-334	GEM-2033	2WF-S33

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	108162 ①					Volume & Switch

Note 1. TC-1 Series use Part #108309; T-2Series use Part #108276.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	22K	
R4	2200Ω	
R5	1000Ω	
R6	470Ω	
R7	1000Ω	

ITEM No.	RATING	REMARKS
R8	1000Ω	
R9	1000Ω	
R10	330Ω	
R11	47K	
R12	15K	
R13	220Ω	

ITEM No.	RATING	REMARKS
R14	5600Ω	
R15	5600Ω	
R16	100Ω	
R17	47Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RCA Victor PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	108165 †						
L2	Osc. Coil	108160						
L3	1st IF Trans.	108157						
L4	2nd IF Trans.	108158						
L5	3rd IF Trans.	108159						

† Chassis RC-1196 uses (Part #108318) in this application.

PRINTED BOARD

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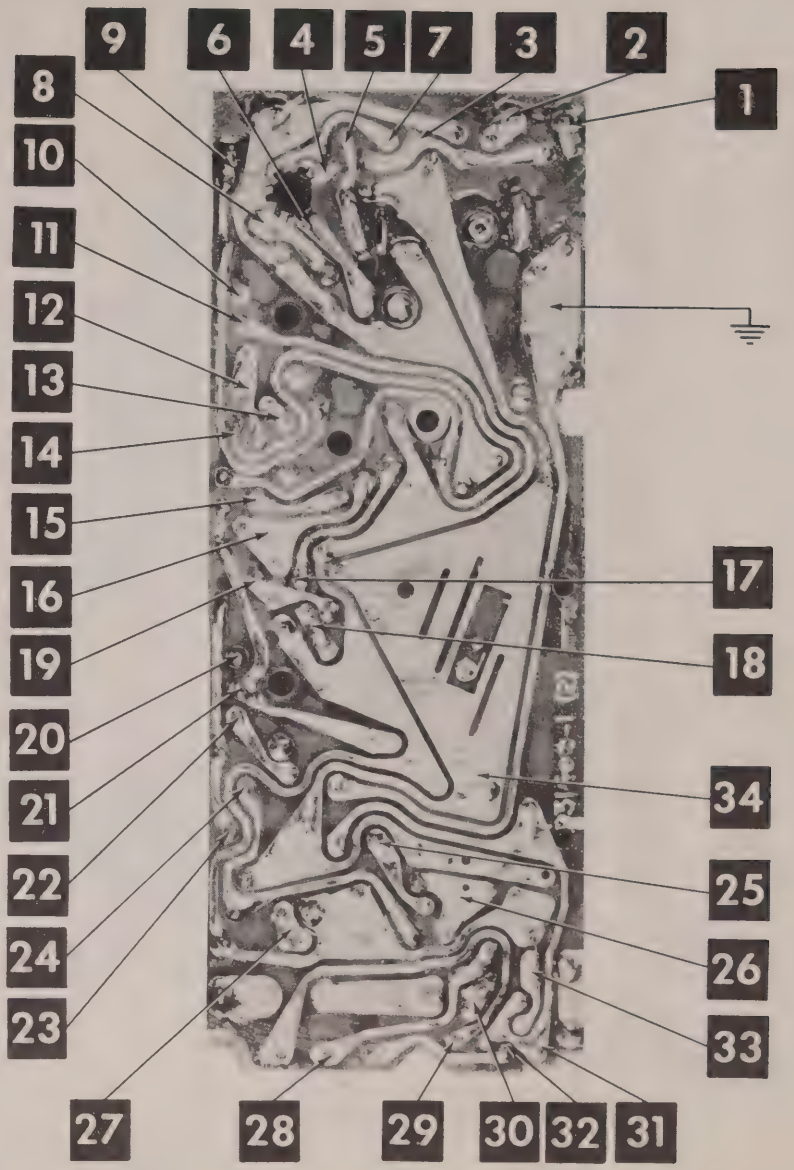


RCA VICTOR MODELS 9TT, 11EH, 11EN, 11JE, 12E, 12J, 12K, 13E, 13FE, 13JE (Ch. RC-1189, B, RC-1196)

FOLDER 15

22-961599-1

48-9824

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	108164						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	3½"	PM	130Ω CT	108163	3A05Z130CT	

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V 1.3V	VS-035		1		935		M-14	Three required, Radio, Nickel-cadmium, Clock

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		RCA Victor PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	10615	1N60	1N60	1N60	Overload (Pigtail)
M3	1N60	10615	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

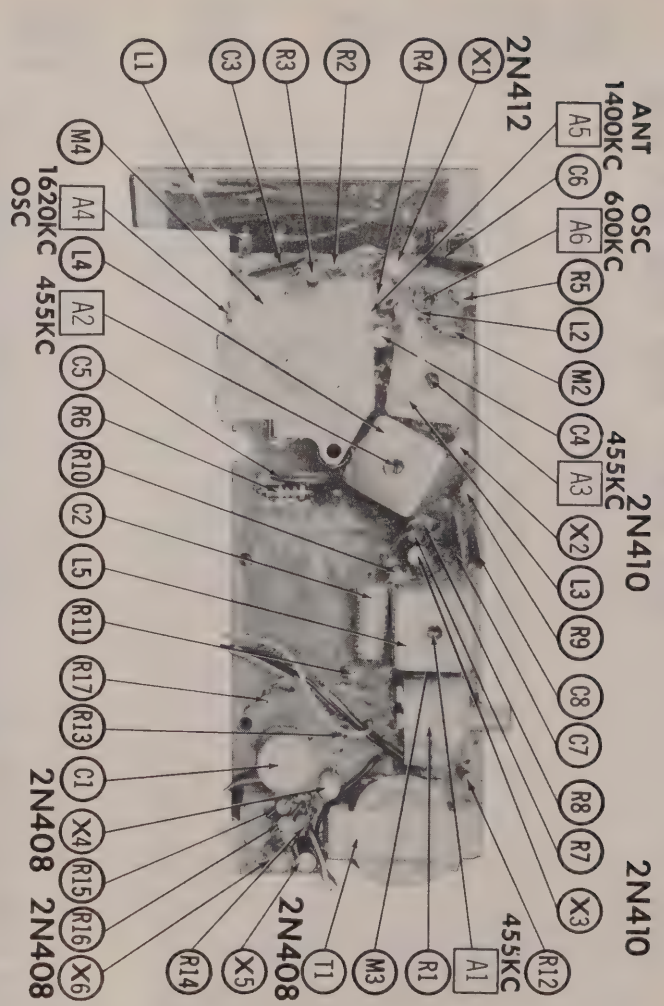
ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	108161	2 Gang, T-1, PT-1 Series (Ant. 12-133mmf, Osc. 13-93mmf)
	Tuning Cap.	108277	2 Gang, T-2 Series
	Tuning Cap.	108308	2 Gang, TC-1 Series
	Printed Board	108170	Includes Fixed Resistors, Capacitors, IF Transformers, Oscillator Coil

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108156	Tuning, T-1 Series
Knob	108280	Tuning, T-2 Series
Knob	108275	Tuning, PT-1 Series
Knob	108321	Tuning, TC-1 Series
Knob	108208	Volume, Model T1JE
Knob	108166	Volume, Model T1EH
Knob	108209	Volume, Model T1EN
Knob	108347	Volume, Model T2-E
Knob	108208	Volume, Model T2-J, PT-1 Series
Knob	108346	Volume, Model T2-K
Knob	108319	Volume, TC-1 Series
Knob	108279	Dial Pointer, T-2 Series
Knob	108322	Clock, Function, TC-1 Series
Dial Pointer	108320	TC-1 Series
Dial	108281	Tuning Control, T-2 Series
Dial	108314	Clock & Radio Control, Model TC1-E
Dial	108313	Clock & Radio Control, Models TC1-JE, TC1-FE
Cabinet	Y7046	Model T1JE
Cabinet	Y7047	Model T1EH
Cabinet	Y7048	Model T1EN
Cabinet	Y7070	Model PT-1
Cabinet	Y7072	Model TC1-E
Cabinet	Y7073	Model TC1-JE
Cabinet	Y7074	Model TC1-FE
Cabinet	X4572	Model T2-E
Cabinet	X4570	Model T2-J
Cabinet	X4569	Model T2-K

CHASSIS—TOP VIEW



CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Handle	108167	T-1 Series, Model PT-1
Handle	108352	Model T2-E
Handle	108351	Model T2-J
Handle	108350	Model T2-K

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODELS 208, 209, 210 (Ch. 528.53660)

SILVERTONE MODELS 208, 209, 210 (Ch. 528.53660)

MODEL 208

SILVERTONE MODELS 208, 209, 210 (Ch. 528.53660)

TRADE NAME	Silvertone Models 208, 209, 210 (Ch. 528.53660)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC
TUNING RANGE—BROADCAST	532 - 1610KC
RATING	9MA @ 4.5 Volts DC (No Signal, Min. Volume) 17MA @ 4.5 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A4, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		High side thru .1mfd to Base of Converter transistor. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		"	1610KC	"	"	A4	"
3.		"	532KC	Tuning gang fully closed	"	A5	"
4.		Loop	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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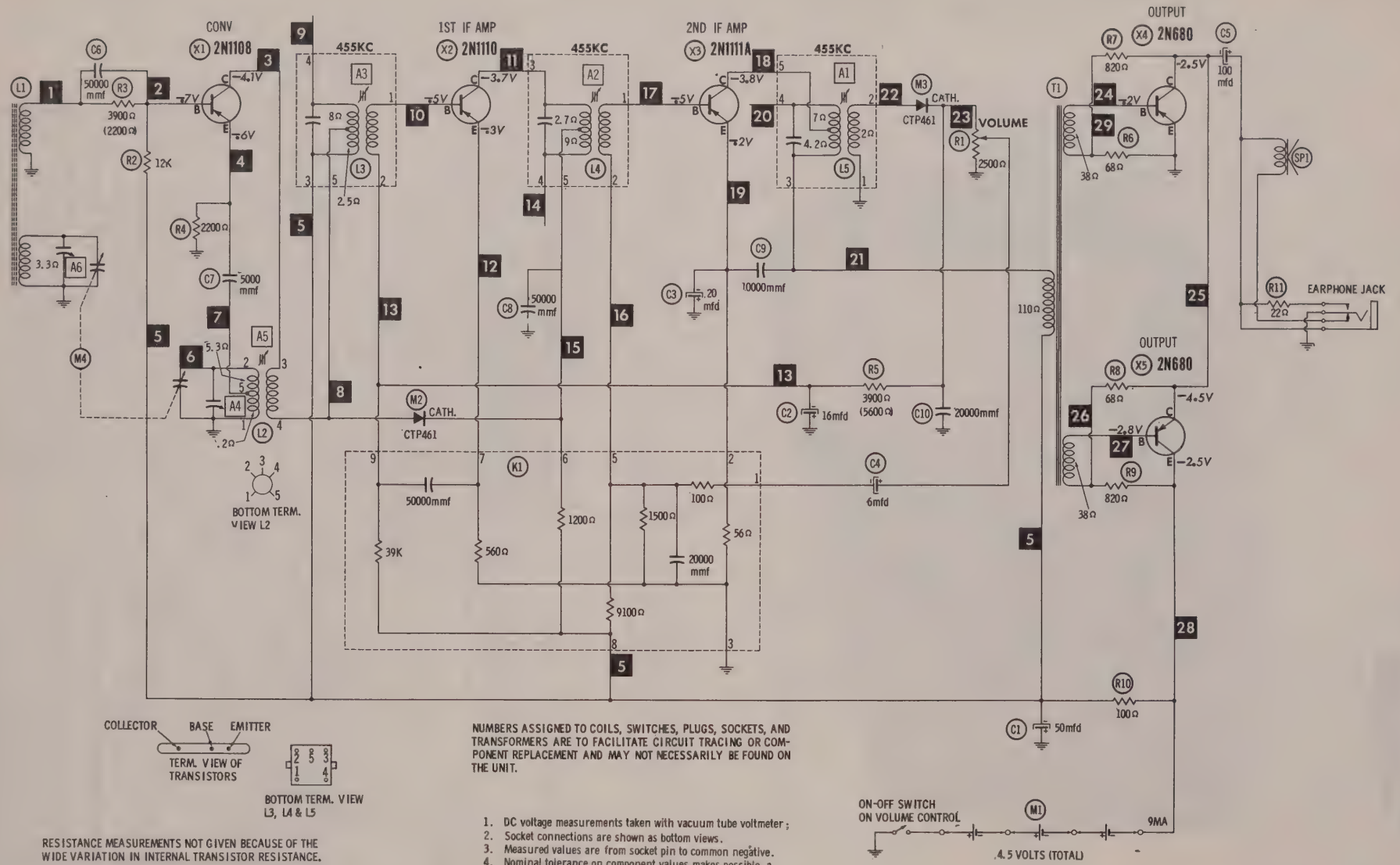
SET 478 FOLDER 16



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SILVERTONE MODELS 208, 209, 210 (Ch. 528.53660)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1108	Converter			2N486	2N412	PNP
X2	2N1110	1st IF Amplifier			2N483	2N409	PNP
X3	2N1111A	2nd IF Amplifier			2N483	2N409	PNP
X4	2N680	Output		2N408	2N360	2N408	PNP } Matched
X5	2N680	Output		2N408	2N360	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	12	18-94-5	PWE25050	NLW50-15	TT15X50	ML50-15	TE-1133	
C2	16	3	18-95-5	XPP-3015	NLW15-12	TT6X15	ML20-6	TE-1053.5	
C3	20	3	18-93-5	PWE3020	EC20-6	TT15X20	ML20-6	TE-1054	
C4	6	15	18-84-5	XPP-15006	ECC-25	TT25X5	ML6-15	TE-1153	
C5	100	15	18-99-5	SRE15V100	NLW100-15	TT15X100	ML100-15	TE-1162	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C7	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C8	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C10	20000		BPD-02	DD-102	BYB6S2	CCD-203	GP120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	24-355-0					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	12K	
R3	3900Ω	(2200Ω) *
R4	2200Ω	
R5	3900Ω	(5600Ω) *

ITEM No.	RATING	REMARKS
R6	68Ω	
R7	820Ω	
R8	58Ω	
R9	820Ω	

ITEM No.	RATING	REMARKS
R10	100Ω	
R11	22Ω	

* Alternate Value

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	IF Coupling	20000mmf, 50000mmf, 56Ω, 100Ω, 560Ω, 1200Ω, 1500Ω, 9100Ω, 39K	13-33-3	Sprague SI-7

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	82-152-0						
L2	Osc. Coil	10-52-4						
L3	1st IF Trans.	10-22-5						
L4	2nd IF Trans.	10-23-5						
L5	3rd IF Trans.	10-24-5						

PRINTED BOARD

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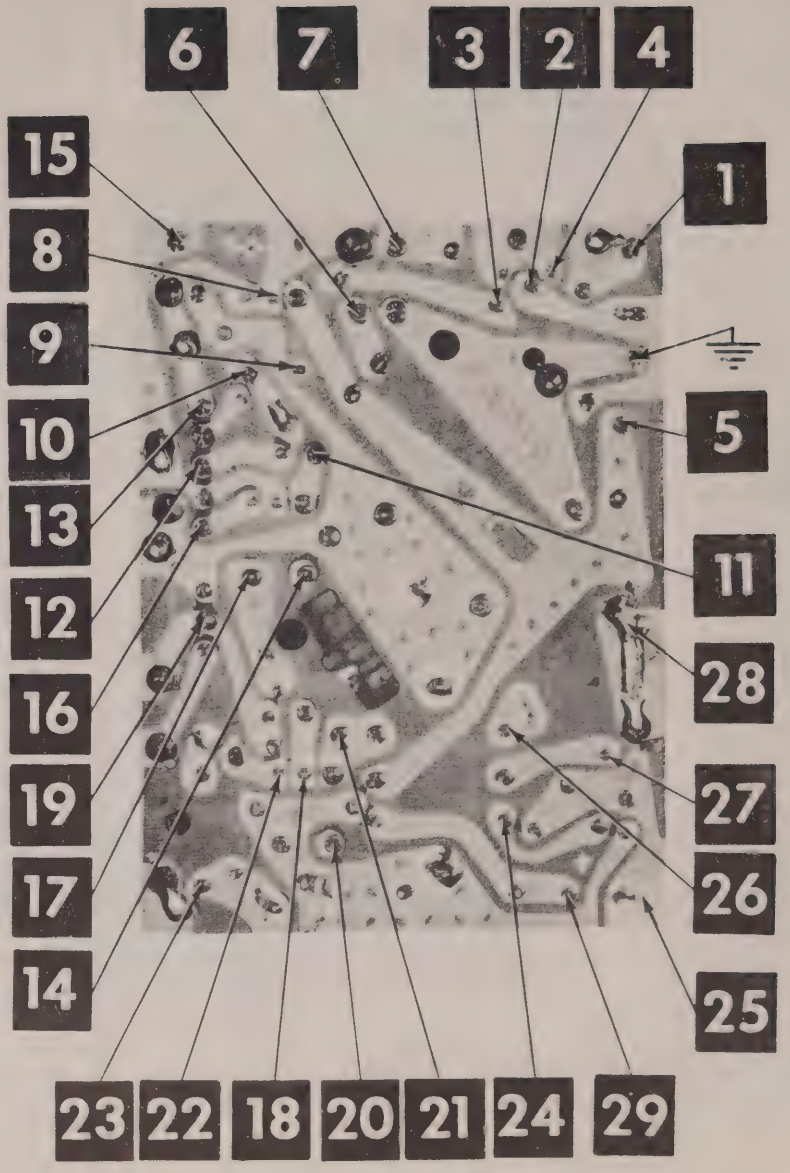


PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.1	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.8 :	1 SEC.2 1	80-100-1						

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	23-26Ω	33-412-4		

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	1.5V	6446 *		130 *		635 *		M-14R *	* Three required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA SILVERTONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2	CTP461		1N60	1N60	1N60	AVC (Pigtail)
M3	CTP461		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Tuning Cap. Printed Board	19-82-2 25-19-1	2 Gang (Ant. 22-247mmf, Osc. 22-90mmf) Less Transistors

CABINETS & CABINET PARTS

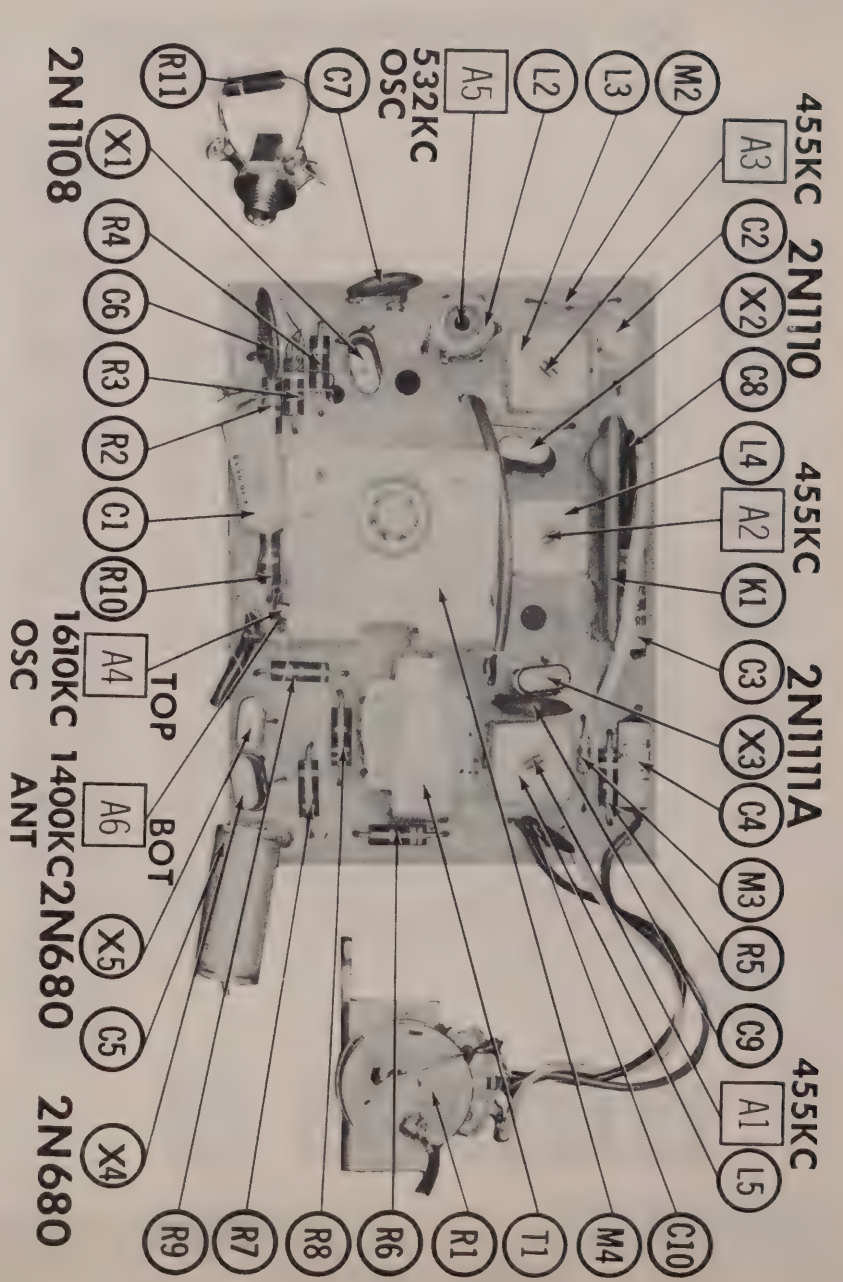
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1247-0	Tuning
Knob	52-1246-0	Volume
Cabinet Front	42-87-1	Model 208
Cabinet Front	42-88-1	Model 209
Cabinet Front	42-89-1	Model 210
Cabinet Rear	84-7705	Model 208
Cabinet Rear	84-7706	Model 209
Cabinet Rear	84-7707	Model 210
Handle	49-501	
Escutcheon	40-204-0	Dial Scale

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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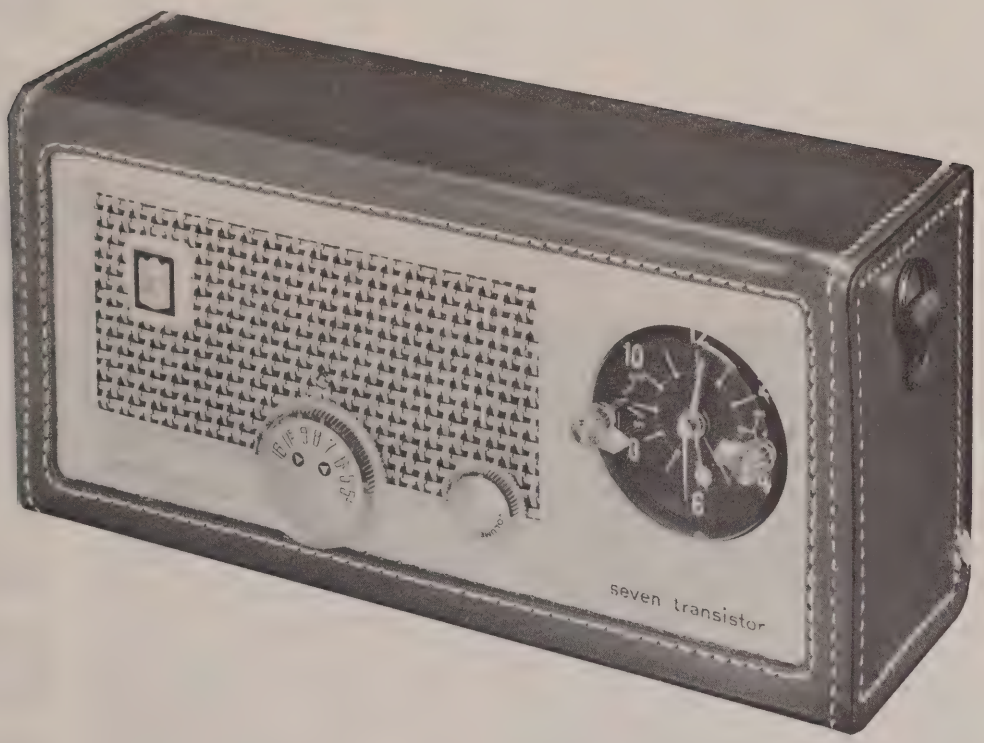
SYLVANIA MODEL 3406 SERIES (Ch. 1-616-2)

SYLVANIA MODEL 3406
SERIES (Ch. 1-616-2)



SYLVANIA MODEL 3406
SERIES (Ch. 1-616-2)

TRADE NAME	Sylvania Model 3406 Series (Ch. 1-616-2)
MANUFACTURER	Sylvania Home Electronic, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N.Y.
TYPE SET	Battery Operated Transistorized AM Receiver with Clock
POWER SUPPLY	9 Volts DC (Radio), 1.5 Volts DC (Clock)
RATING	11.3MA @ 9 Volts DC (No Signal, Min. Volume) 30MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A6 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A4, A5 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1650KC	"	"	A4	"
3.	"	1400KC	Tune to 1400KC signal	"	A5	Adjust for maximum output while rocking tuning gang.
4.	"	600KC	600KC	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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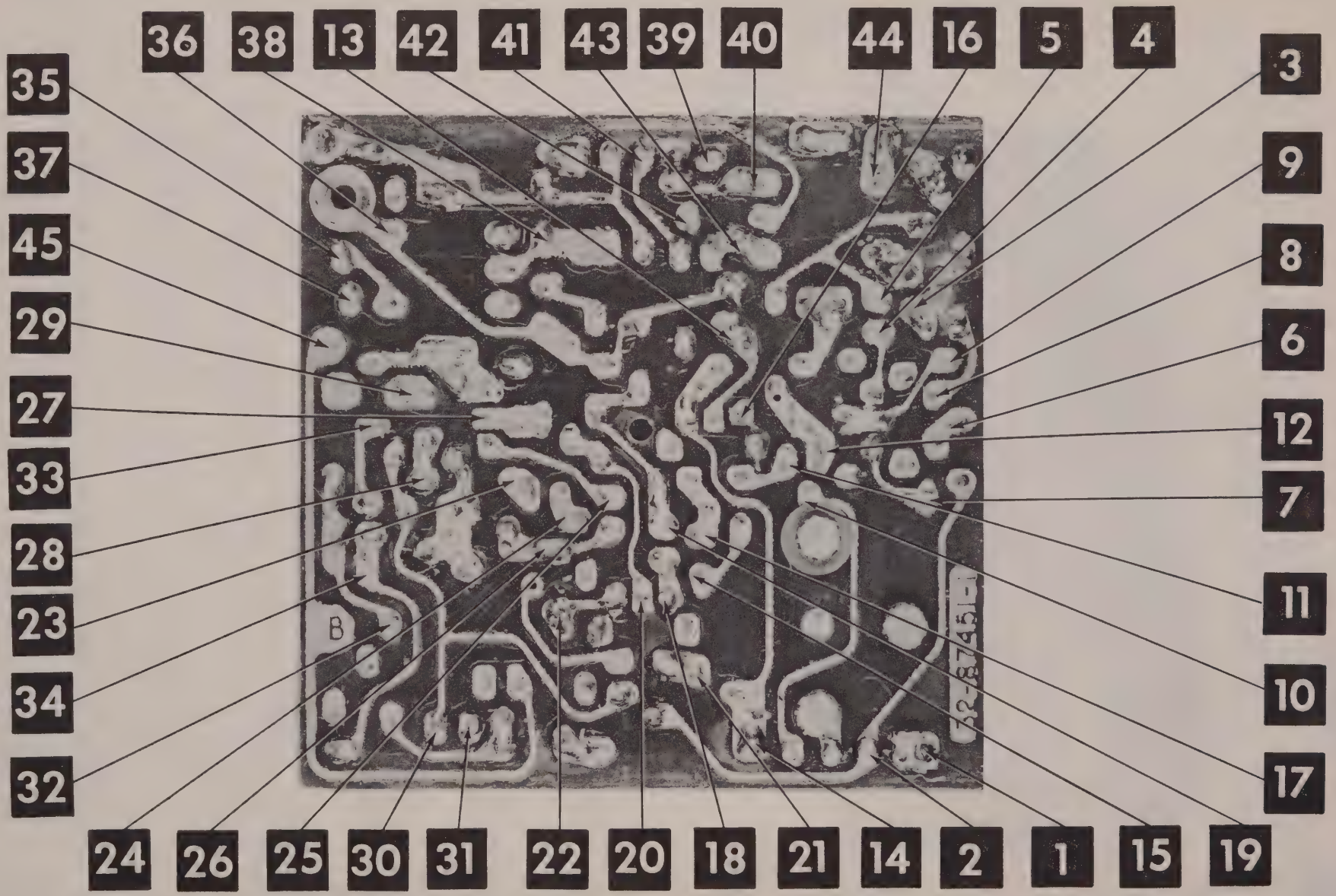
SET 478 FOLDER 17



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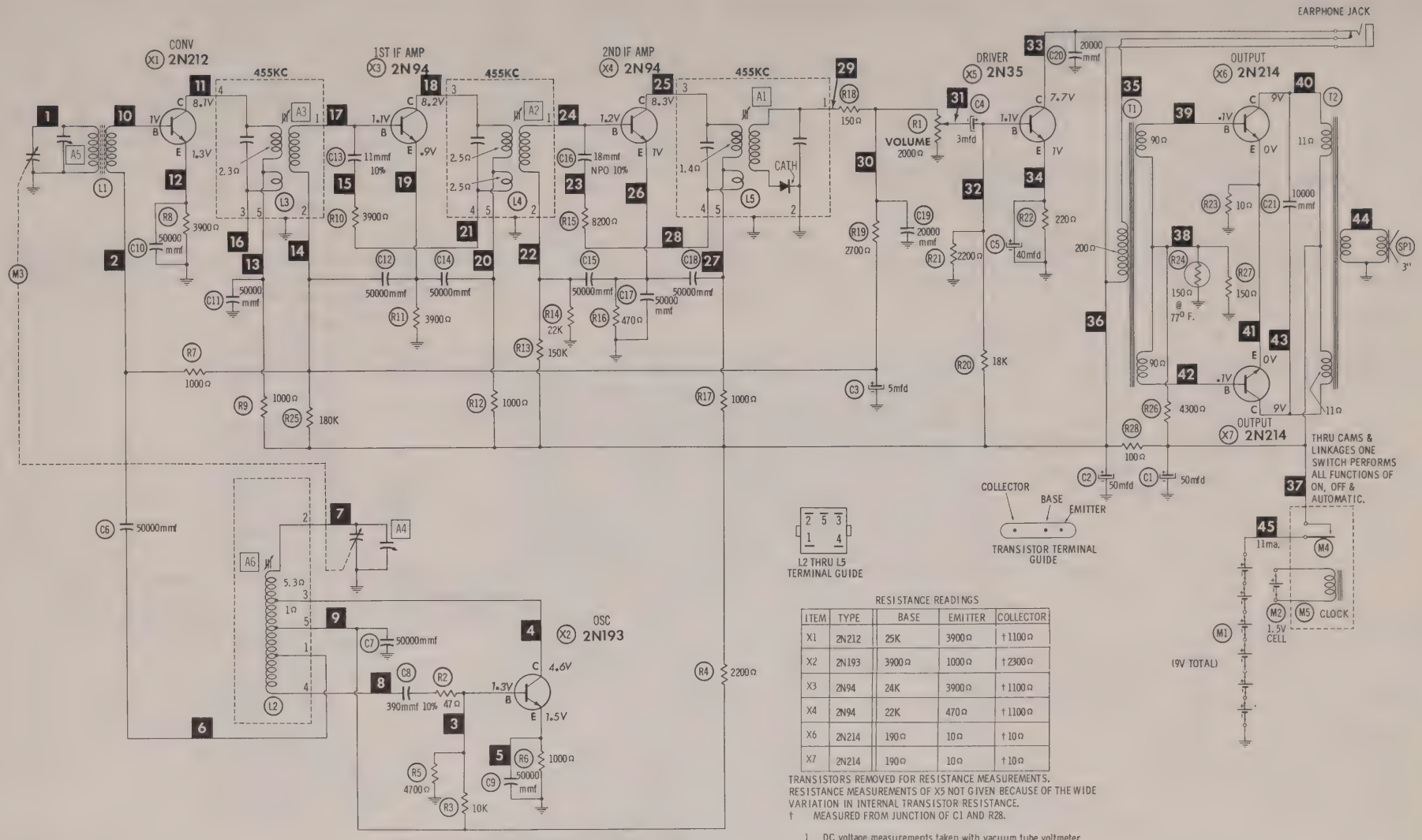
PRINTED BOARD



RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N212	25K	3900Ω	†1100Ω
X2	2N193	3900Ω	1000Ω	†2300Ω
X3	2N94	24K	3900Ω	†1100Ω
X4	2N94	22K	470Ω	†1100Ω
X6	2N214	190Ω	10Ω	†10Ω
X7	2N214	190Ω	10Ω	†10Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
RESISTANCE MEASUREMENTS OF X5 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF C1 AND R28.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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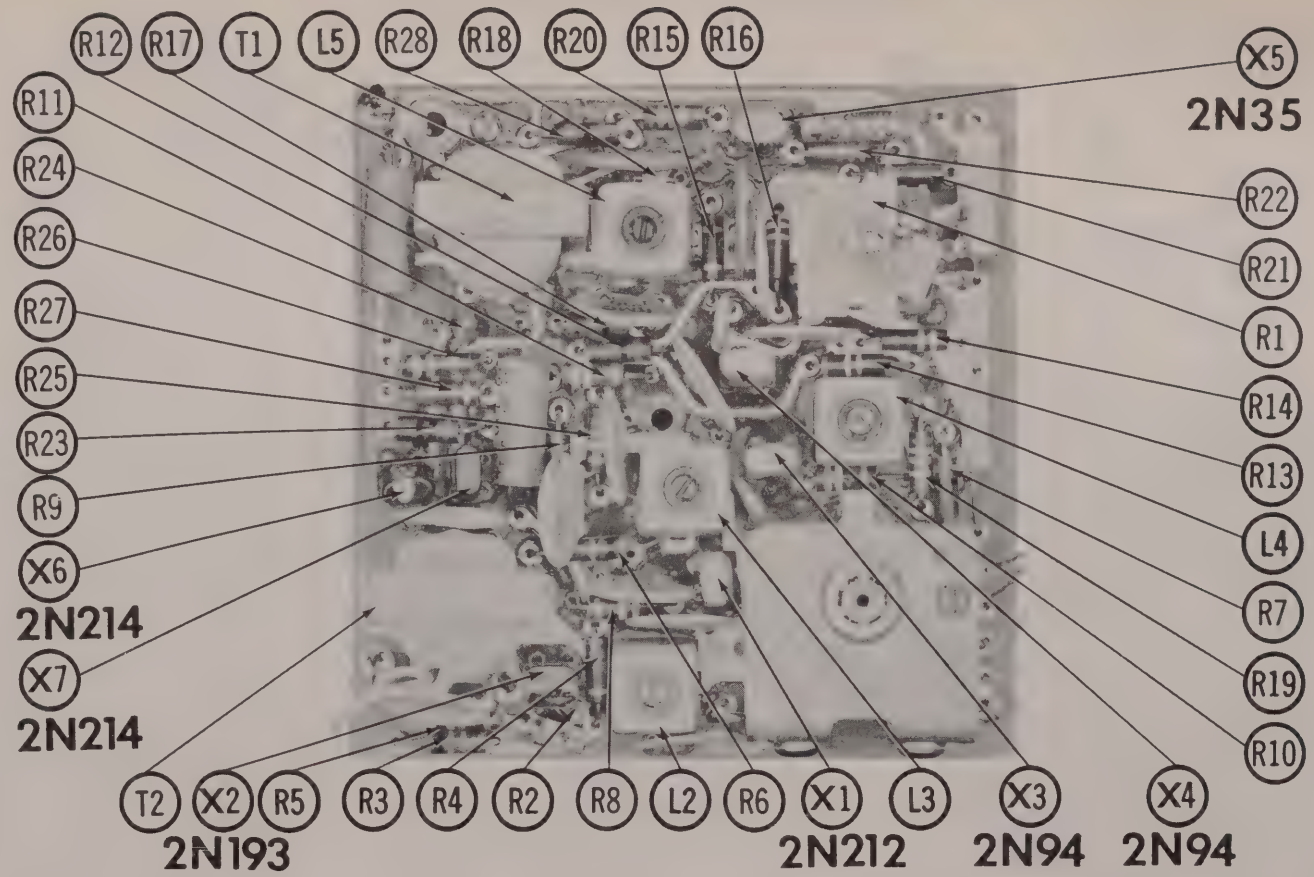
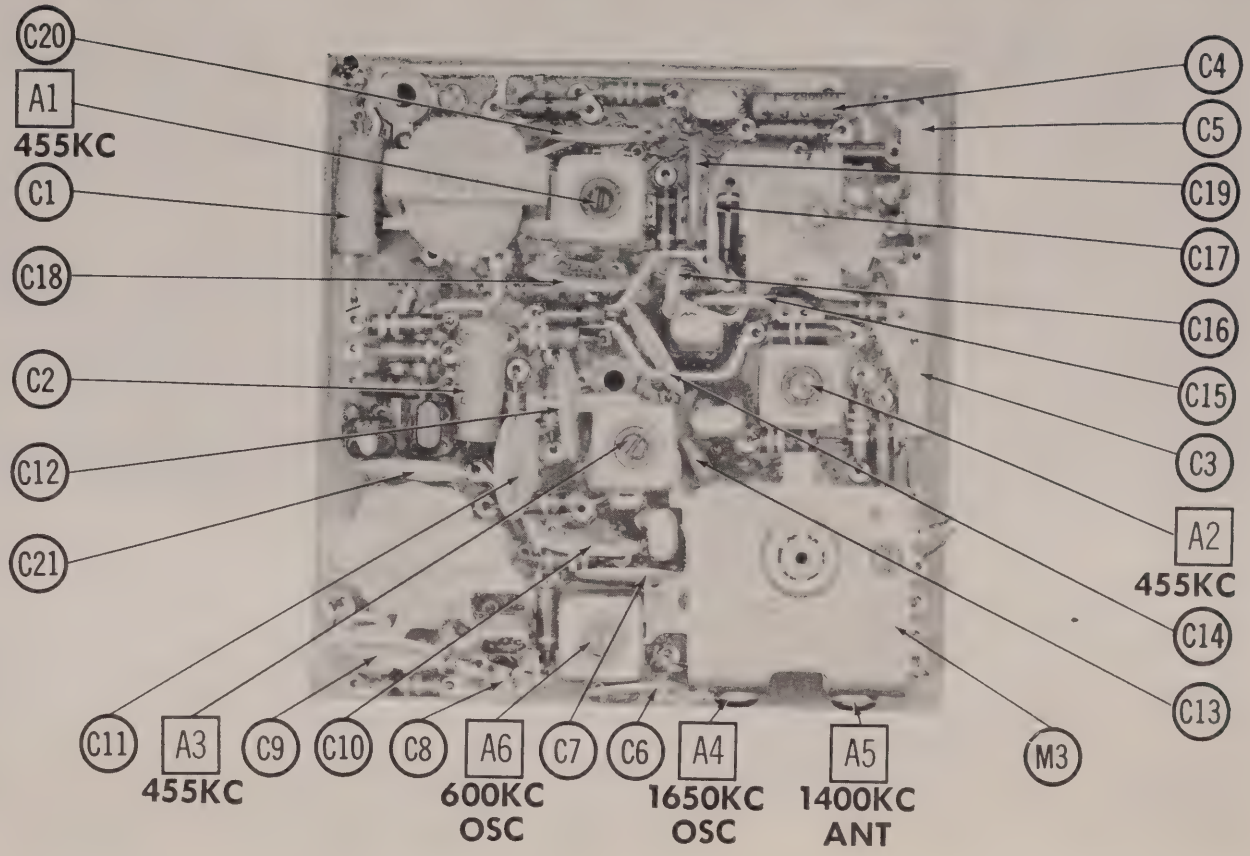
SYLVANIA MODEL 3406
SERIES (Ch. 1-616-2)



CHASSIS TOP VIEW - RESISTOR, INDUCTOR & TRANSISTOR IDENT.



CHASSIS TOP VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Mixer			2N1366	2N212	NPN
X2	2N193	Oscillator			2N1366	2N193	NPN
X3	2N94	1st IF Amp.	2N439		2N1366	2N94	NPN
X4	2N94	2nd IF Amp.	2N439		2N1366	2N94	NPN
X5	2N35	Driver	2N438			2N649	NPN
X6	2N214	Output				2N649	NPN } Matched Pair
X7	2N214	Output				2N649	NPN } Matched Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	10	161-1039	PWE10050	EC50-10	TT10X50	ML50-15	TE-1119	
C2	50	10	161-1039	PWE10050	EC50-10	TT10X50	ML50-15	TE-1119	
C3	5	6	161-1038	PWE6005	EC5-6	TT6X5	ML5-6	TE-1084	
C4	3	6	161-1037	PWE6003	EC3-6	TT6X3	ML4-6	TE-1082	
C5	40	3	161-1036	PWE3040	EC40-3	TT3X40	ML40-6	TE-1057	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50000		BPD-05	DD-503			GP150	5HK-S50
C7	50000		BPD-05	DD-503			GP150	5HK-S50
C8	390 10%		1469-00039	DD-391	5R5T39	CM-19B-391K	MCB243	MS-339
C9	50000		BPD-05	DD-503	BYB6S5		GP150	5HK-S50
C10	50000		BPD-05	DD-503	BYB6S5		GP150	5HK-S50
C11	50000		BPD-05	DD-503	BYB6S5		GP150	5HK-S50
C12	50000		BPD-05	DD-503			GP150	5HK-S50
C13	11 10%		NPO-DI 10	TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C14	50000		BPD-05	DD-503			GP150	5HK-S50
C15	50000		BPD-05	DD-503			GP150	5HK-S50
C16	18 NPO 10%			TCZ-18	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C17	50000		BPD-05	DD-503			GP150	5HK-S50
C18	50000		BPD-05	DD-503			GP150	5HK-S50
C19	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C20	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C21	10000		BPD-01	DD-201	BYA10S1	CCD-103	GP110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/4	152-0038					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	47Ω	
R3	10K	
R4	2200Ω	
R5	4700Ω	
R6	1000Ω	
R7	1000Ω	
R8	3900Ω	
R9	1000Ω	
R10	3900Ω	

ITEM No.	RATING	REMARKS
R11	3900Ω	
R12	1000Ω	
R13	150K	
R14	22K	
R15	8200Ω	
R16	470Ω	
R17	1000Ω	
R18	150Ω	
R19	2700Ω	

ITEM No.	RATING	REMARKS
R20	18K	
R21	2200Ω	
R22	220Ω	
R23	10Ω	
R24	150Ω @ 77°F	#189-0076
R25	180K	
R26	4300Ω	
R27	150Ω	
R28	100Ω	

Sylvania Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SYLVANIA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	581-0011						
L2	Osc. Coil	113-0038						
L3	1st IF Trans.	121-0029						
L4	2nd IF Trans.	122-0029						
L5	3rd IF Trans. Assy.	122-0030 †						

† Includes detector crystal.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	143-0056	TR-1 ①			TR-1 ①		① Bend ears down.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	175Ω CT	3-4Ω	143-0077	TR-21 ①				TR-21 ①		① Bend ears down.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	3"	PM	6-8Ω	539-0300		

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	①		1 ①		635 ①		M-14R①	① 6 Required (Radio)
M2	1.5V	②		230 ②		A100 ②		M-13R ②	② 1 Required (Clock)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M3	Tuning Cap.	170-0025	2 Gang
M4	Switch		Part of Clock
M5	Clock		Assembly, Includes Motor & Switch

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	741-0048	Tuning
Knob	742-0029	Volume, (Includes Compression Ring Part #554-0095)
Knob	740-0255	Clock, Controls
Crystal	717-0008	Clock
Case	814-0015	Leather

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

TRAV-LER MODELS 1001, 1100, 1104

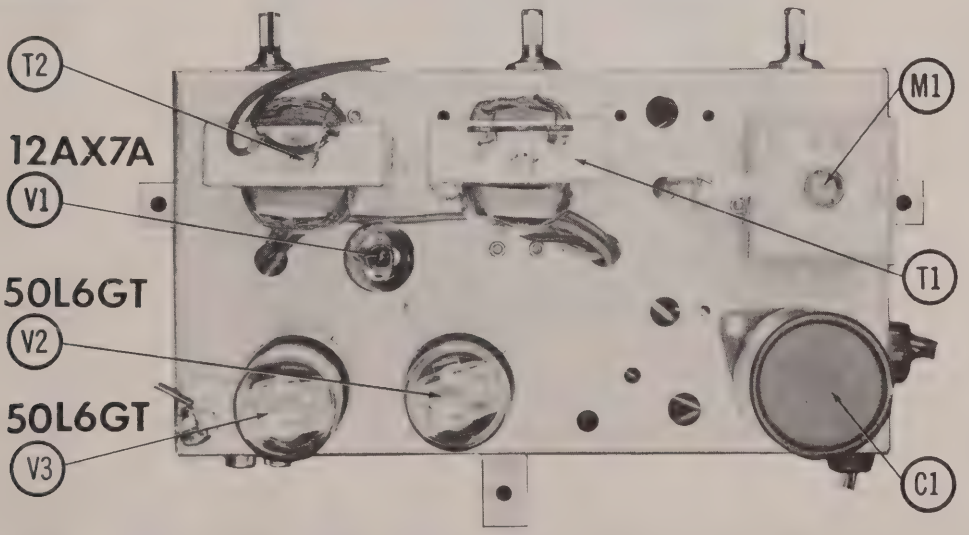
TRAV-LER MODELS
1001, 1100, 1104

MODEL 1104

TRAV-LER MODELS
1001, 1100, 1104

TRADE NAME	Trav-Ler Models 1001, 1100, 1104
MANUFACTURER	Trav-Ler Radio Corp., 571 W. Jackson Blvd., Chicago 6, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 28 Watts, .32 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #RC-35 — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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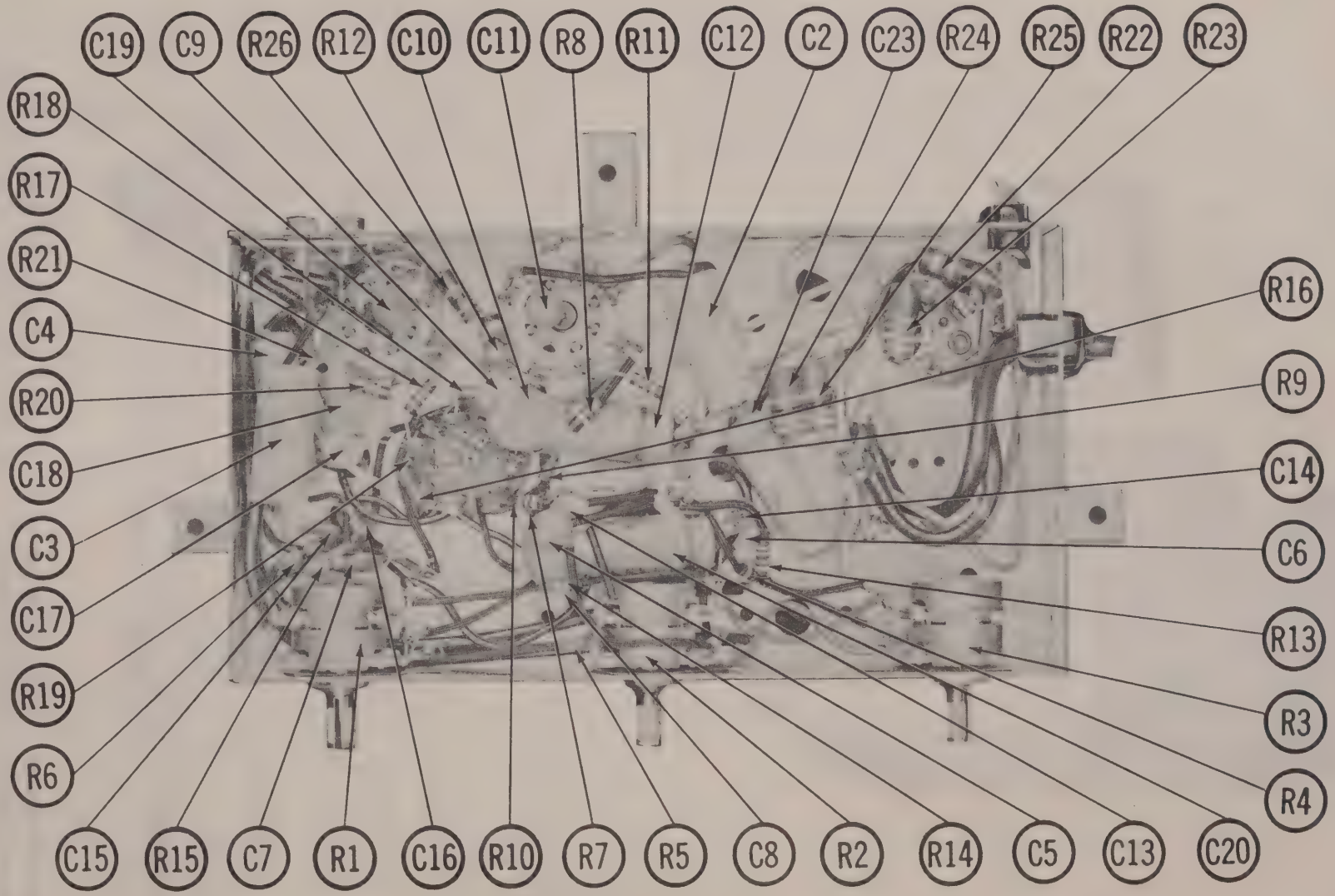
JT528

SET 478 FOLDER 18



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7A
V2	Channel 1 Output	50L6GT
V3	Channel 2 Output	50L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150	EC-29	AFH3-44	C0350	FP369.1	TMT-23	TVL-3758	
B	■40	150							
C	▲40	150							
C2	10	70	EC-11	SRE70V10	BBR10-90	TC42	TD-10-150	TVA-1406	
C3	10	70	EC-11	SRE70V10	BBR10-90	TC42	TD-10-150	TVA-1406	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C5	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C6	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C7	2000 10%		DI-2000		1R5D2	CCD-202	GP220	10TS-D20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C9	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C11	2000 10%		DI-2000		1R5D2	CCD-202	GP220	10TS-D20
C12	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C13	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C14	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C15	2000 10%		DI-2000		1R5D2	CCD-202	GP220	10TS-D20
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	2000 10%		DI-2000		1R5D2	CCD-202	GP220	10TS-D20
C20	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C21	2mfd 50V		P292ZN-2.0		MP2W2			118P20502S2
C22	2mfd 50V	Note 1	P292ZN-2.0		MP2W2			118P20502S2
C23	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5

Note 1. Not used in Models 1001, 1100.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg *	1/2	VC-152				■ UE3956	Loudness, Channel 1
B	3meg *	1/2						Loudness, Channel 2
R2A	250K	1/2	VC-151				▲ UE4007	Treble, Channel 1
	125K tap							
B	250K	1/2						Treble, Channel 2
	125K tap							
R3A	2meg	1/2	VC-153	B-75	AD47-2meg-S	Q11-139	▲ UE1878	Bass, Channel 1
B	2meg	1/2		SR-75	Not Req.	M11-139		Bass, Channel 2
C	Shaft			Not Req.	KSS-3	Not Req.		

* Taps @ 1meg & 2meg.
■ "STA-LOC" equivalent: FA36T95, RU36T95, CS3500.
▲ "STA-LOC" equivalent: FA254T1253, RU254T1253, CS3500.
▲ "STA-LOC" equivalent: FB26L, RU26L, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	47K	
R5	220K	
R6	100K	
R7	2.2meg	
R8	470K	
R9	270Ω	
R10	47K	
R11	470K	

ITEM No.	RATING	REMARKS
R12	220Ω 1W	
R13	47K	
R14	220K	
R15	100K	
R16	2.2meg	
R17	470K	
R18	270Ω	
R19	47K	

ITEM No.	RATING	REMARKS
R20	470K	
R21	220Ω 1W	
R22	10K 1W	
R23	270Ω 1W	
R24	47Ω 2W	Note 1
R25	47Ω 2W	Note 1
R26	22Ω 1W	

Note 1. R24 & R25 may be replaced with a single 23Ω 4W in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2000Ω	20Ω	AT-46							2 used
T2		SEC. 2								
		1-2Ω								

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRAV-LER PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SPK-62①	6A31	① Channel 1, Model 1104
SP2	3"	PM	4-6Ω	SPK-28①	3A15TZ4.7	② Channel 2, Model 1104
SP3	6"	PM	3-4Ω	SPK-62②	6A31	③ Model 1100, & 1101
SP4	3"	PM	4-6Ω	SPK-28②	3A15TZ4.7	④ Model 1100
	6"	PM	3-4Ω	SPK-62③	6A31	
	5"	PM	3-4Ω	SPK-36④	5A07	
	3"	PM	4-6Ω	SPK-28③	3A15TZ4.7	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRAV-LER PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.072A	① SR-5	①T300	①1236AH	① 300	② SR500	① Selenium Type ② Silicon Type

PHONO CARTRIDGE

ITEM No.	TRAV-LER PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	PU-36	13TB	Not Req.	66 †	Not Req.			8TA4-S	N-8TA-S

† Use Mount PT-3.

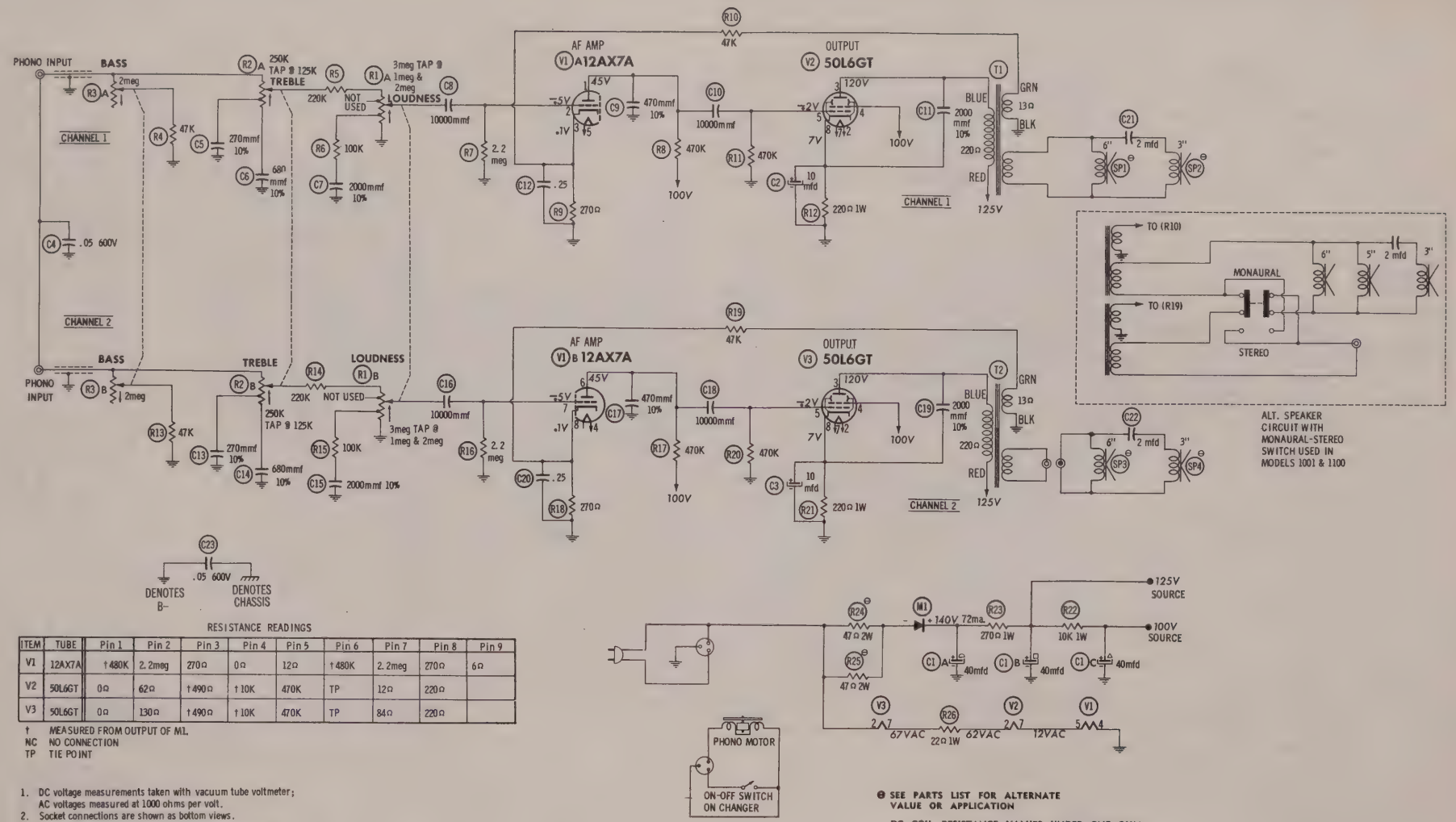
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	(78RPM)	W-106STS † or W-106STD ♦	CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
	(LP)		CRA-55X † or CRA-55XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
	Switch	SW-27	Stereo-Monaural (DPDT, Slide Type) Models 1001, 1100



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†480K	2.2meg	270Ω	0Ω	12Ω	†480K	2.2meg	270Ω	6Ω
V2	50L6GT	0Ω	62Ω	†490Ω	†10K	470K	TP	12Ω	220Ω	
V3	50L6GT	0Ω	130Ω	†490Ω	†10K	470K	TP	84Ω	220Ω	

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TRAV-LER MODELS 1001, 1100, 1104

PHOTOFACT® Folder

ZENITH MODELS C725C, F, L, C730, E, R (Ch. 7C05, 7C06)

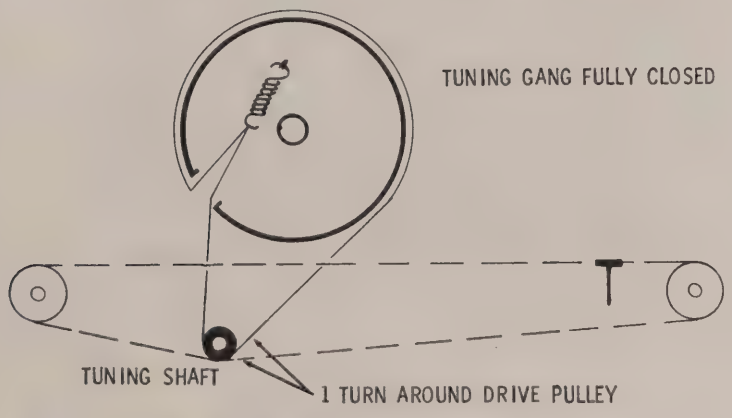
ZENITH MODELS C725C, F, L, C730, E, R (Ch. 7C05, 7C06)

MODEL C730R

ZENITH MODELS C725C, F, L, C730, E, R (Ch. 7C05, 7C06)

TRADE NAME	Zenith Models C725C, C725F, C725L (Ch. 7C06); C730, C730E, C730R (Ch. 7C05)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	AC-DC Operated 7 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	28 Watts, .32 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 535 - 1620KC	FREQ. MOD.	88 - 108MC

DIAL CORD STRINGING



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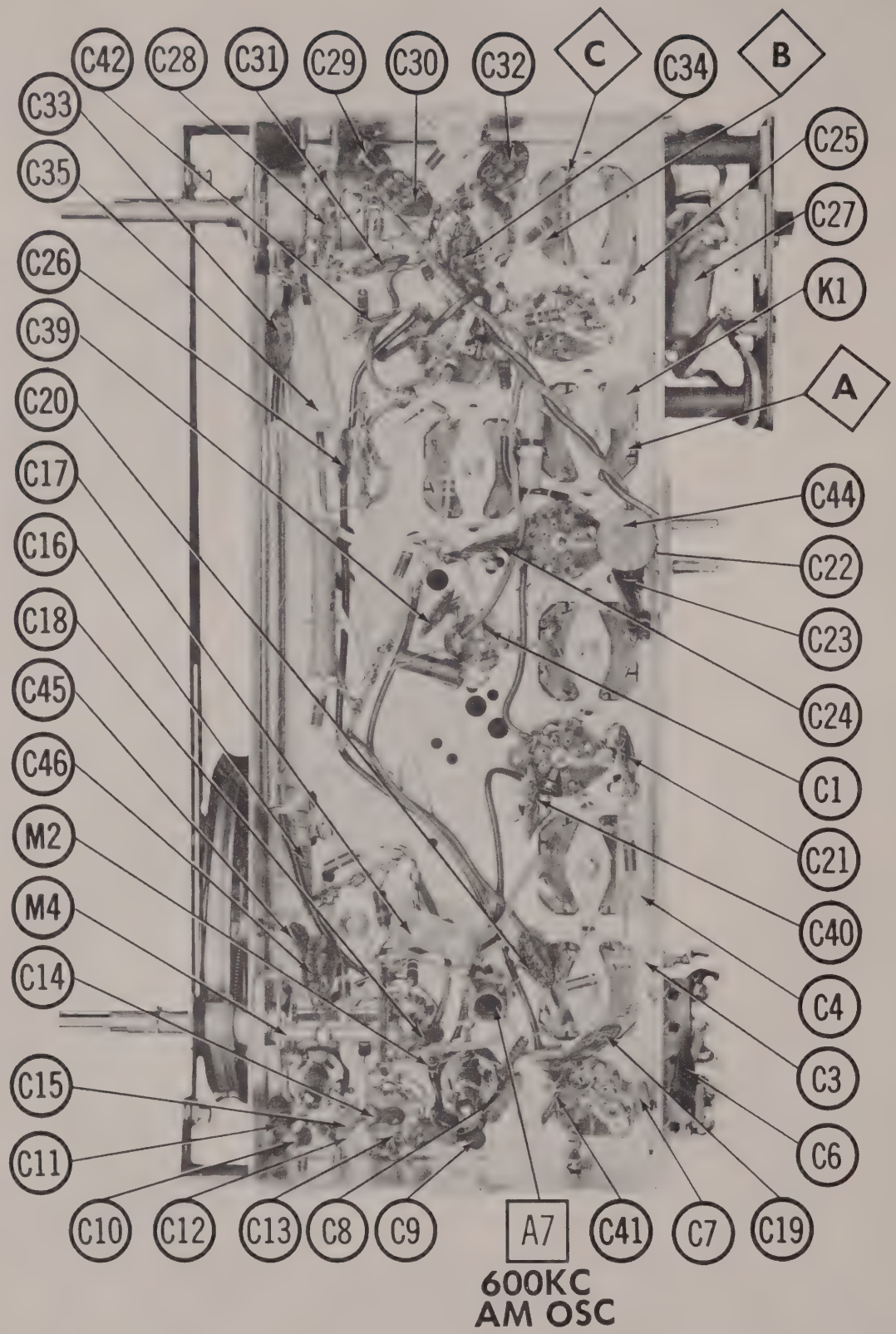
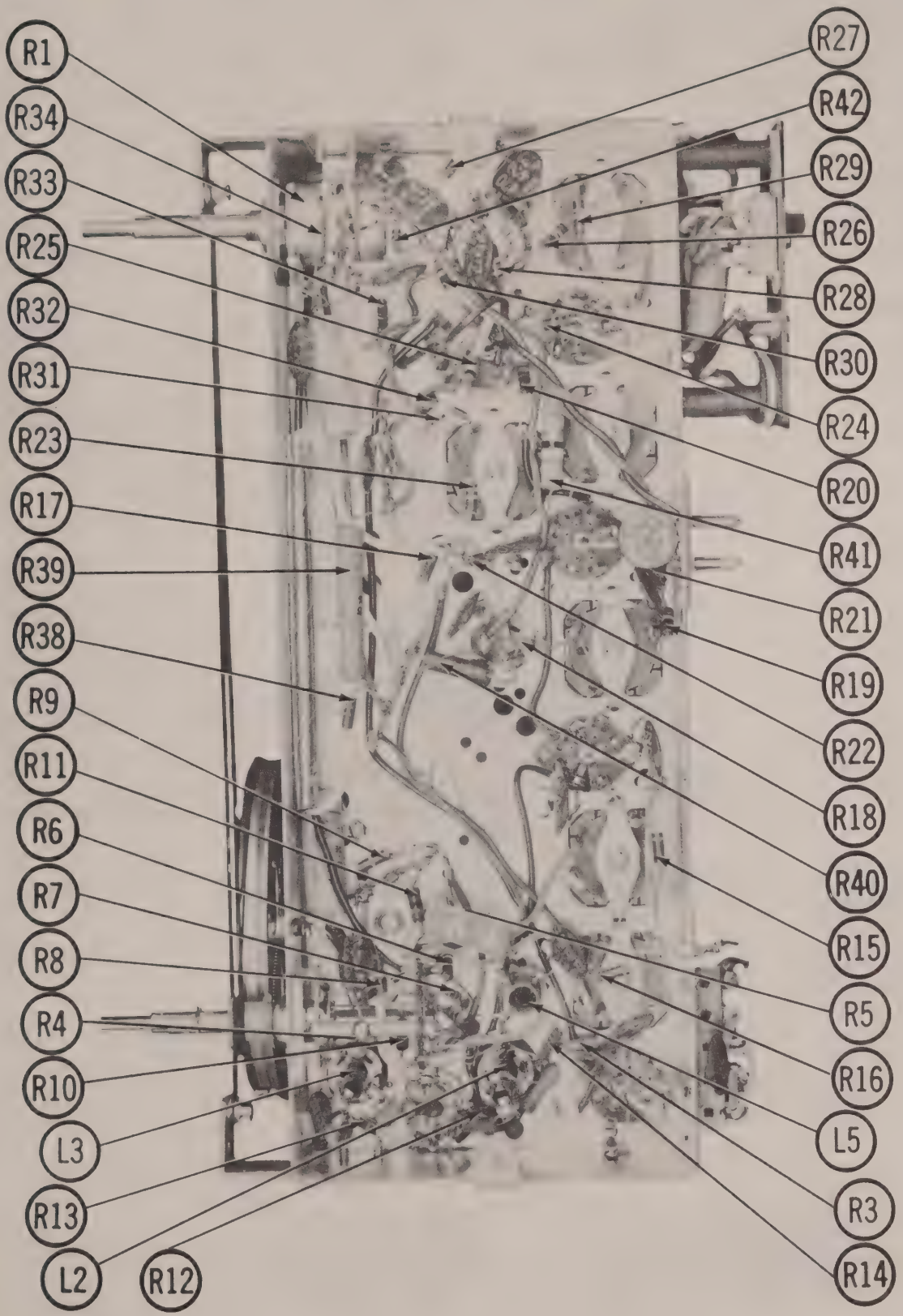
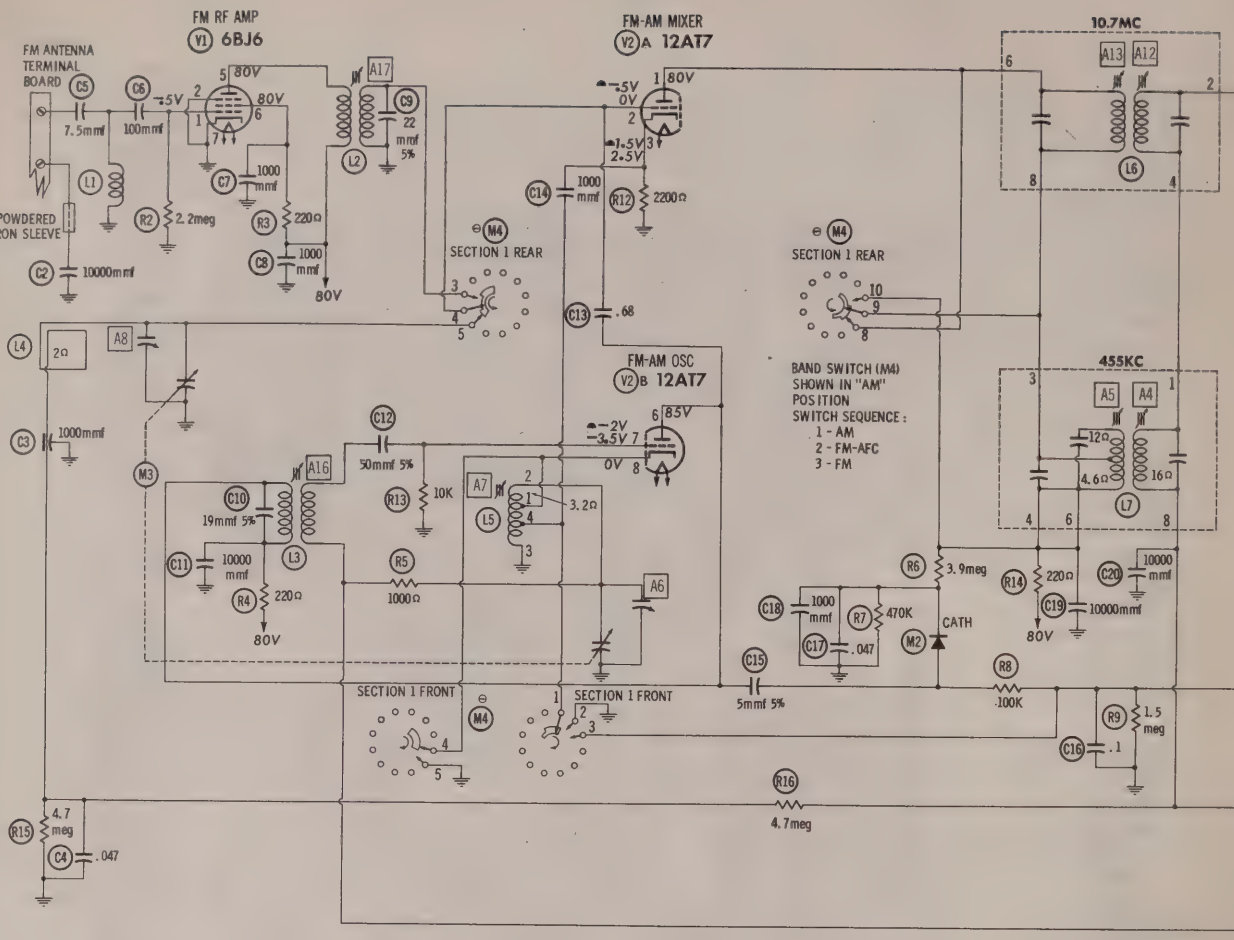
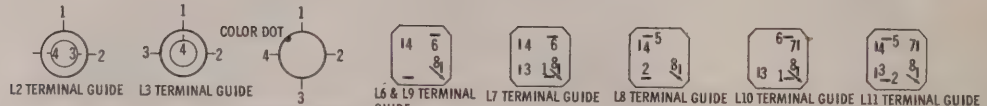


CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW – RESISTOR & INDUCTOR IDENT.





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	2.2meg	0Ω	112Ω	106Ω	†1000Ω	†1200Ω	0Ω		
V2	12AT7	†1200Ω	0Ω ▪3meg	2200Ω	106Ω	94Ω	†1200Ω	10K	0Ω	100Ω
V3	12BA6	2.3meg	0Ω	94Ω	82Ω	†1200Ω	†1200Ω	0Ω		
V4	12BA6	100K	0Ω	82Ω	70Ω	†1200Ω	†1200Ω	100Ω		
V5	12AU6	100K	0Ω	31Ω	19Ω	†16K	†16K	0Ω		
V6	19T8	150K	150K	300K	0Ω	19Ω	700K	0Ω	4.7meg	†470K
V7	35C5	150Ω	470K	147Ω	112Ω	470K	†1000Ω	†270Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
: MEASURED IN "AM" POSITION.
▪ MEASURED IN "FM-AFC" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter ; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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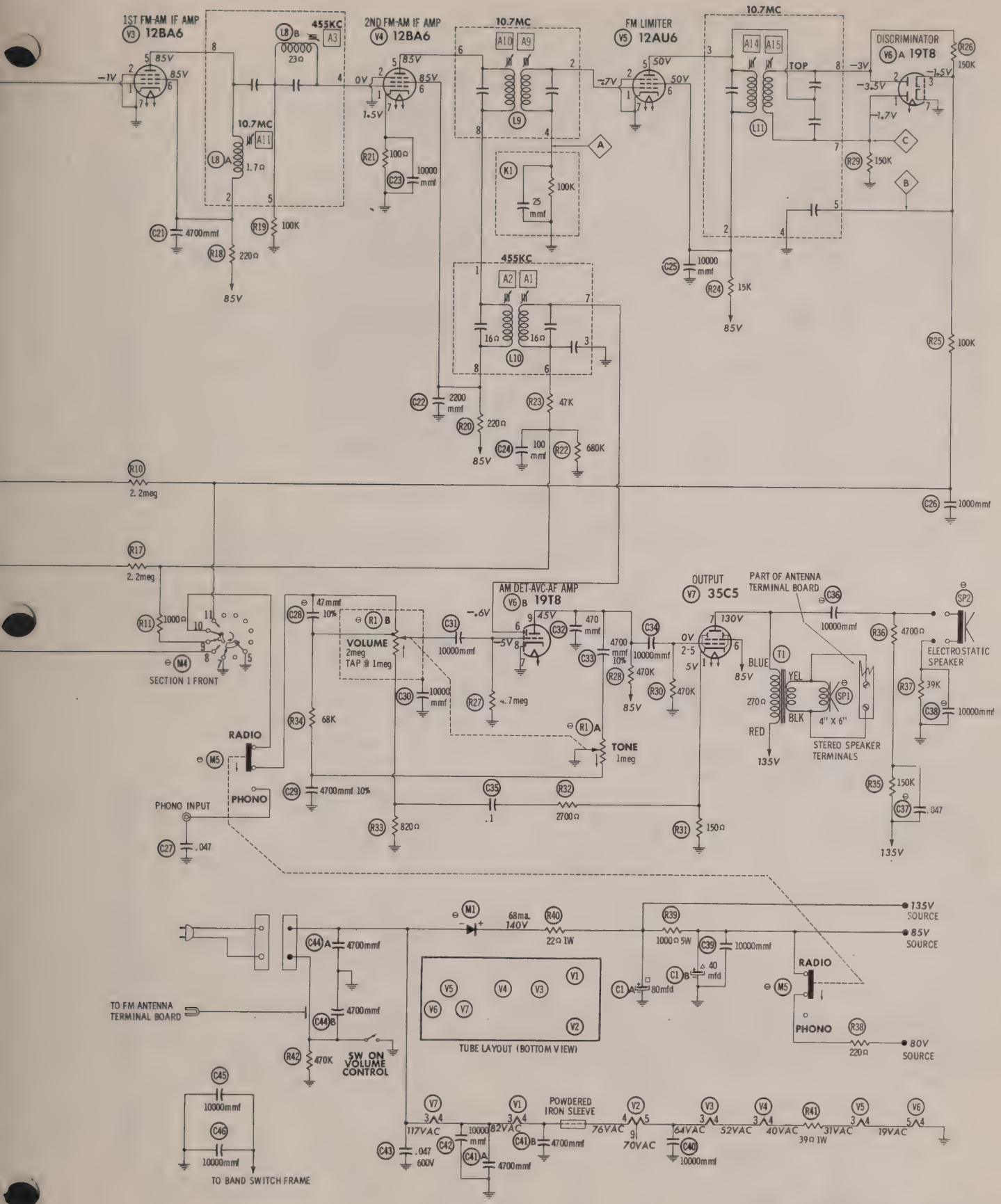


ZENITH MODELS C725C, F, L.
C730, E, R (Ch. 7C05, 7C06)

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator.
Suggested Alignment Tools: A1 thru A5, A7, A9 thru A16 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A6, A8 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT - BANDSWITCH IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ Mod.)	(AM) 600KC	Across voice coil	A1, A2, A3, A4, A5	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A7	"
4.	"	1400KC	Tune to 1400KC signal	"	A8	Adjust for maximum while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - BANDSWITCH IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (A). Common to chassis.	A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (C). Common to chassis.	A14	"
7.	"	"	"	DC probe to point (B). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - BANDSWITCH IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .005mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A14	"
7.	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A15 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - BANDSWITCH IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 270Ω in high side.	98MC (Unmod.)	(FM) 98MC	DC probe to point (A). Common to chassis.	A16, A17	Adjust for maximum deflection.

FIG. 1

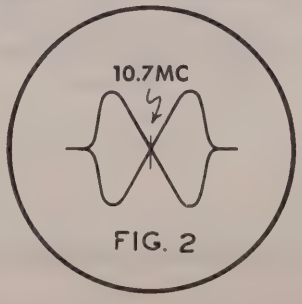


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BJ6	V5	FM Limiter	12AU6
V2	FM AM Mixer - FM AM Osc.	12AT7	V6	Discriminator - AM Det. - AVC - AF Amplifier	19T8
V3	1st FM - AM IF Amp.	12BA6	V7	Output	35C5
V4	2nd FM - AM IF Amp.	12BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	22-3056	AFH2-19	XB0181	FP216	TMD-16	TVL-2442.1	
B	▲40	150							

FIXED CAPACITORS

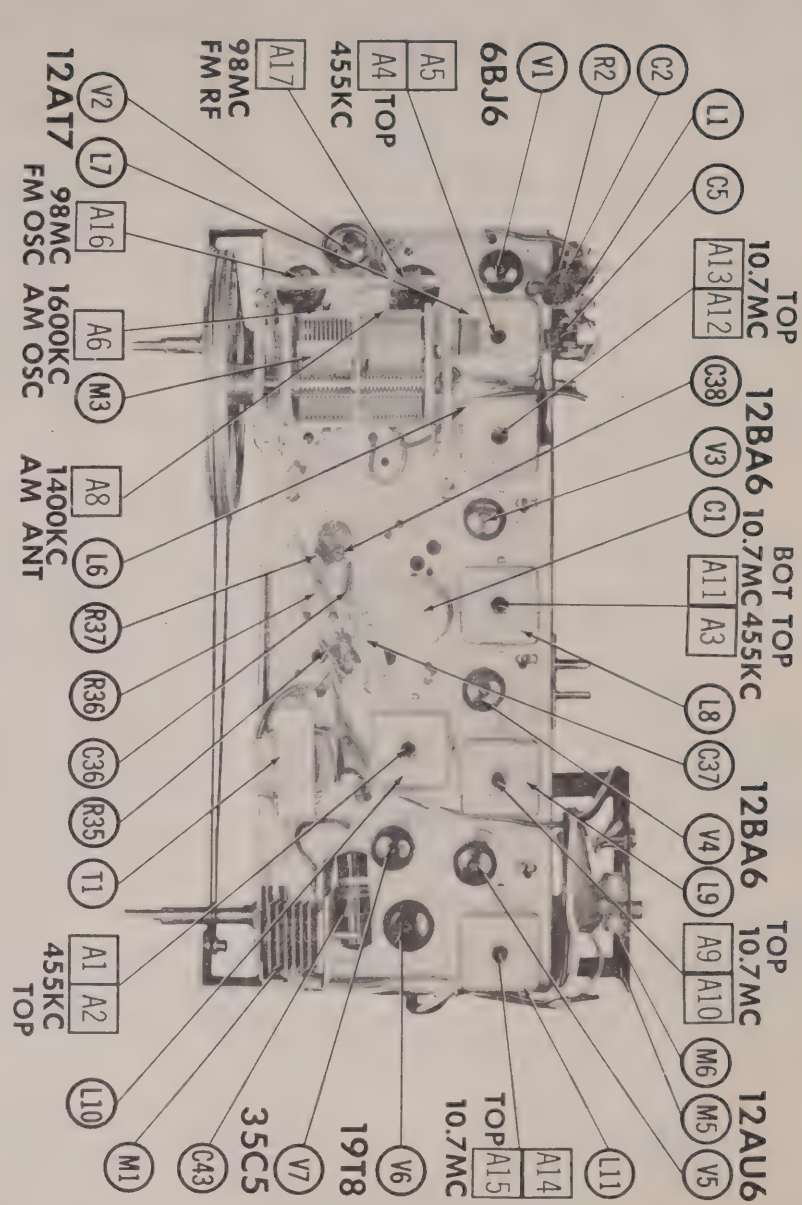
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C3	1000		EF-001	MFT-1000		CCF-102	CT280A	
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	7.5			DD-7R5	L10V8		GP580	10TS-V75
C6	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C7	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C8	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C9	22 5%		NPO-SI 22	TCZ-22	C10Q22C	CM-19B-220J	CNO-422	10TCC-Q22
C10	19 5%		NPO-SI 20	TCZ-20	C10Q20C	CM-19B-200J	CNO-418	10TCC-Q20
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	50 5%		NPO-SI 50	TCZ-50	C10Q5C	CM-19B-500J	CNO-450	10TCC-Q50
C13	.68	#22-1766	NPO-SI .68	TCZ-R68				
C14	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C15	5 5%		NPO-SI 5.0	TCZ-4R7	C10V5C	CM-19B-050J	CNO-547	10TCC-V50
C16	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C17	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C18	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C22	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C24	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C27	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C28	47 10%	Note 1	NPO-SI 47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C29	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C33	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C36	10000	Note 2	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C37	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-104	GEM-4147	2TM-S47
C38	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C41A	4700		BPD-2X0047	DD2-502	BYC6DD47	CCD-472	B2X250	5HK-2D47
B	4700					CCD-472		
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C43	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C44A	4700		BPD-2X0047	DD2-502	BYC6DD47	CCD-472	B2X250	5HK-2D47
B	4700					CCD-472		
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	GO110	5HK-S10

Note 1. Not used in Chassis 7C06.
Note 2. Chassis 7C06 uses 1000mmf in this application.

Zenith Part Number.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		63-4477	F1-51		† QJ-1142R	▪ UE4090-S	Tone Note 1
B	2meg			R2-72				Volume, Tap ② 1meg
C	Switch			KR-1				Power Off-On

† "Concentrikit" Equivalent: K-2 Kit with base elements and shafts: B11-137, P1-123 (Panel)
Not available as a factory assembled unit. B18-139X, P1-210 (Rear)
76-1 (Switch)

▪ "STA-LOC" Equivalent: FA16L, RU26T16, OS1750, IS2312, US41.
Note 1. Chassis 7C06 uses Part #63-4496 in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	220Ω	
R4	220Ω	
R5	1000Ω	
R6	3.9meg	
R7	470K	
R8	100K	
R9	1.5meg	
R10	2.2meg	
R11	1000Ω	
R12	2200Ω	
R13	10K	
R14	220Ω	
R15	4.7meg	

ITEM No.	RATING	REMARKS
R16	4.7meg	
R17	2.2meg	
R18	220Ω	
R19	100K	
R20	220Ω	
R21	100Ω	
R22	680K	
R23	47K	
R24	15K	
R25	100K	
R26	150K	
R27	4.7meg	
R28	470K	
R29	150K	

ITEM No.	RATING	REMARKS
R30	470K	
R31	150Ω	
R32	2700Ω	
R33	820Ω	
R34	68K	
R35	150K	
R36	4700Ω	
R37	39K	
R38	220Ω	
R39	1000Ω 5W	
R40	22Ω 1W	
R41	39Ω 1W	
R42	470K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	FM Limiter Grid Filter	25mmf, 100K	105-42	Sprague PRC-11

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	20-355						
L2	FM RF Coil	S-13871						
L3	FM Osc. Coil	S-15733						
L4	Loop Antenna	S-46211 †						
L5	AM Osc. Coil	S-43067						
L6	1st FM IF	95-1150	16-3487 *	16-3487 *	FM-251 ▲	1451 ▲		
L7	1st AM IF	95-1250						
L8A	2nd FM IF	95-1251						
B	2nd AM IF							
L9	3rd FM IF	95-1150	16-3487 *	16-3487 *	FM-251 ▲	1451 ▲		
L10	3rd AM IF	95-1102	16-6770 *	16-6770 *	BC-355 *	12-C6 *		
L11	Discriminator	95-1153						

* Remove center bolt mounting plate and use adapter plate.
▲ Enlarge mounting holes.
† Chassis 7C06 uses Part #S-46544 in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	95-1661	22S46	A-2928	AU-603	A-3876	22S46	S-1X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	49-823 ①	46A1	① Chassis 7C05
SP2	Electrostatic			S-23829 ①		② Chassis 7C06
	4" x 6"	PM		49-886 ②		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.068A	212-23 ① 212-13 ②	T100 ①	1235AH	100A ①	SR-200 ③	① Selenium Type ② Alternate Part No. ③ Silicon Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2		103-29				AFC (Silicon, Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap.	22-3039	2 Gang (Ant. 7-403mmf, Osc. 9-134mmf)
M4	Switch	85-621	Bandswitch (Chassis 7C05)
	Switch	85-624	Bandswitch (Chassis 7C06)
M5	Switch Assembly	S-46229	Radio-Phono Control Strip, Includes Radio-Phono Switch, Part #85-495
	Switch	85-495	Radio-Phono, Chassis 7C06 (DPDT, Slide Type)

CABINETS & CABINET PARTS

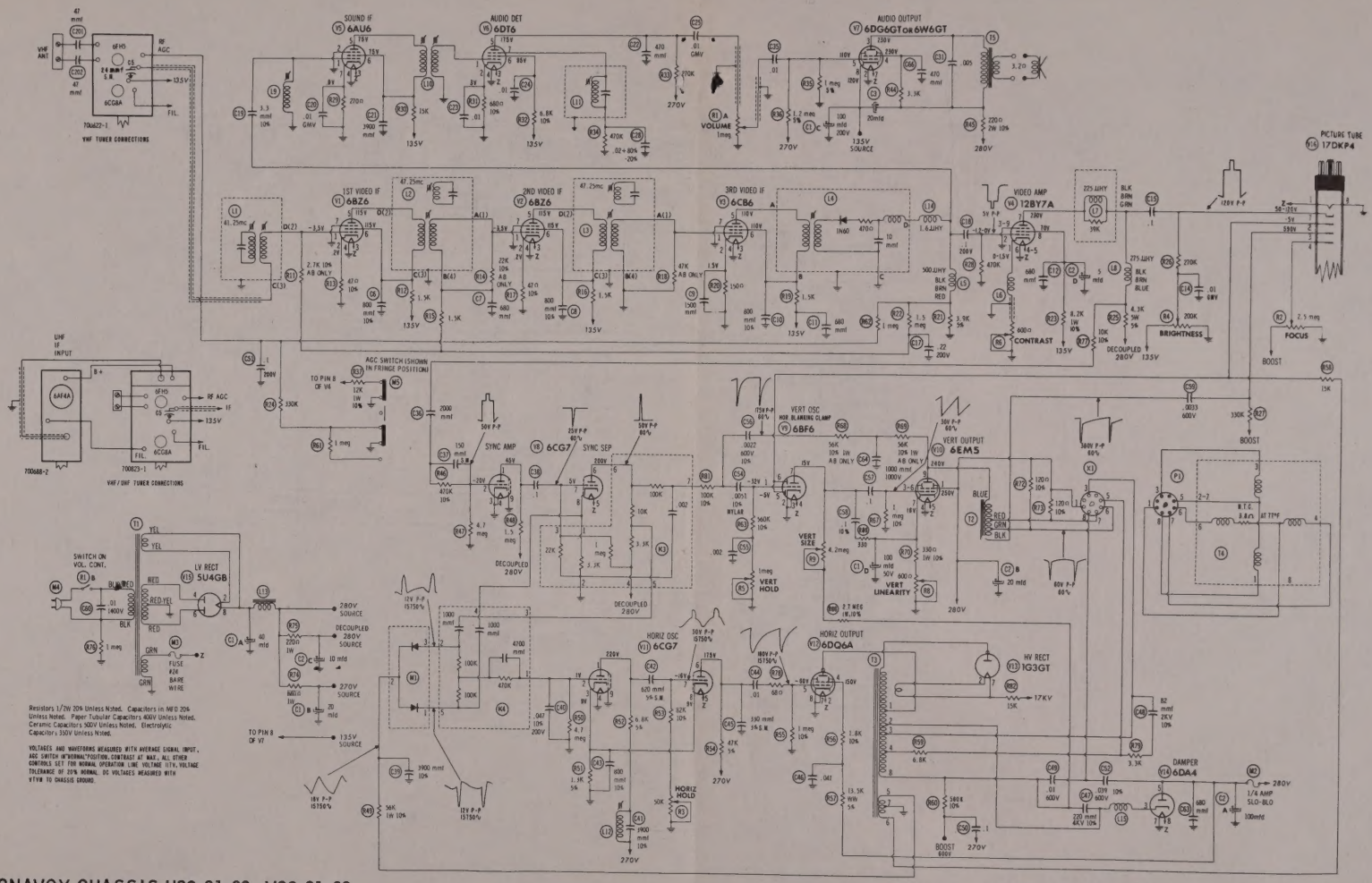
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-2099	Tuning, Tone, Model C730, E, R
Knob	46-2100	Tuning, Tone, Model C725C, F, L
Knob	46-2163	Volume, Bandswitch, Model C730, E, R
Knob	46-2184	Volume, Bandswitch, Model C725C, F, L
Dial Scale	26-628	Chassis 7C05
Dial Scale	26-631	Chassis C725C, L, F
Dial Scale	12-2748	Chassis 7C06
Dial Pointer	59-350	Model C730, E, R
Dial Pointer	59-353	Model C725C, L, F
Dial Crystal	192-277	Model C725C, L, F
Cabinet & Crystal	S-46212	Assembly, Model C730R
Cabinet & Crystal	S-46216	Assembly, Model C730E
Cabinet & Crystal	S-46240	Assembly, Model C730
Cabinet	14-2677	Model C725C
Cabinet	14-2678	Model C725L
Cabinet	14-2679	Model C725F

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

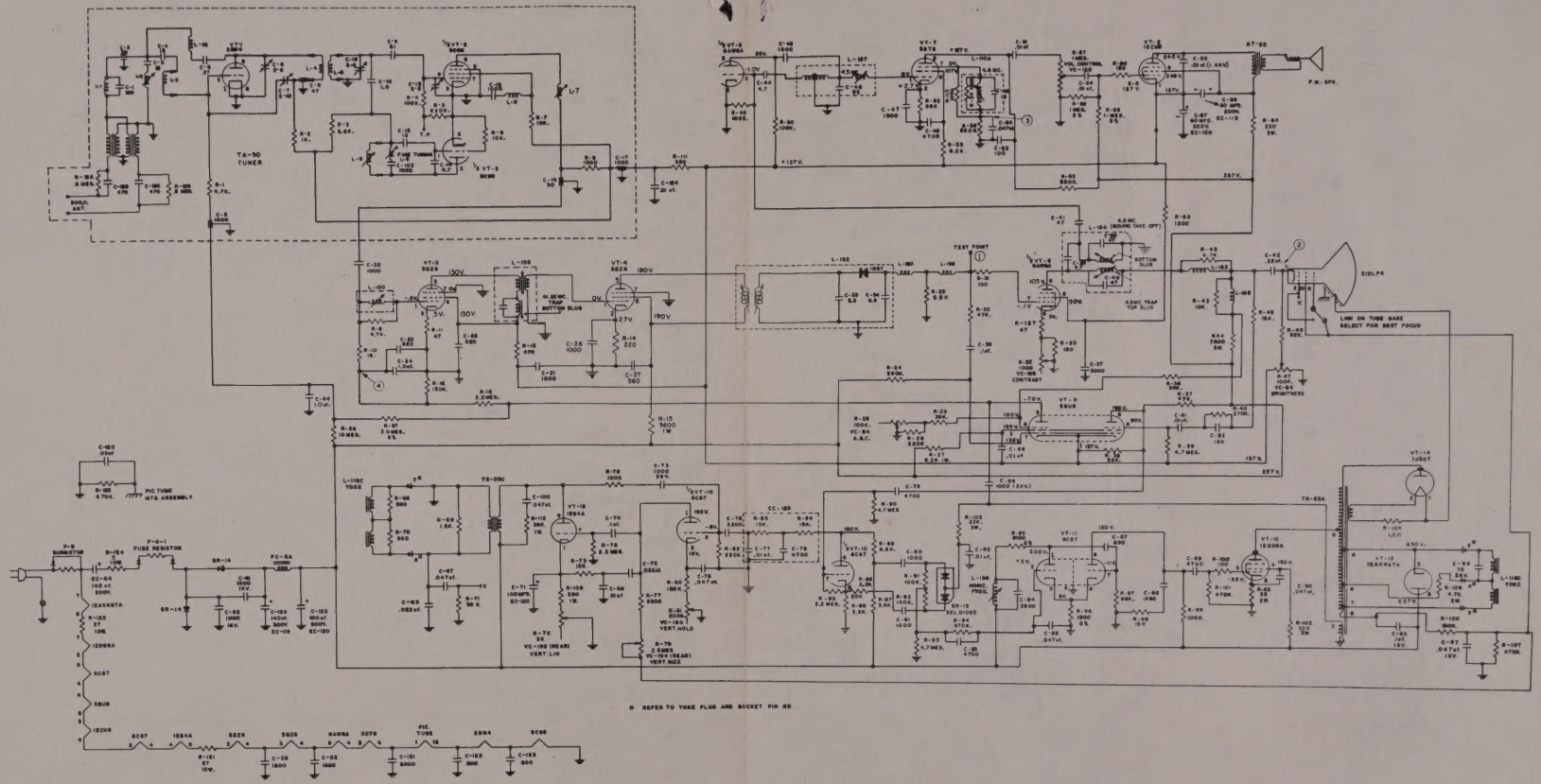


Resistors 1/2W 20% Unless Noted. Capacitors in MFD 20% Unless Noted. Paper Tubular Capacitors 400V Unless Noted. Ceramic Capacitors 500V Unless Noted. Electrolytic Capacitors 350V Unless Noted.

VOLTAGES AND WAVEFORMS MEASURED WITH AVERAGE SIGNAL INPUT, AGC SWITCH IN "NORMAL" POSITION, CONTRAST AT MAX., ALL OTHER CONTROLS SET FOR NORMAL OPERATION. LINE VOLTAGE 117V, VOLTAGE TOLERANCE OF 20% NORMAL. DC VOLTAGES MEASURED WITH VTVM TO CHASSIS GROUND.

MAGNAVOX CHASSIS U32-01-00, V32-01-00

Schematic Diagram Courtesy of The Magnavox Company



TRAV-LER MODELS 921-K-810, 921-MT-805, (CH. 1150-29, 1155-29)

Schematic Diagram Courtesy of Trav-Ler Radio Corporation

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